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CONTENTS

Editorial Notes	681
Early Training of Railway Officers	683
International Transport and Communications	683
U.S.A. Railway Rates and Charges	684
The Mont Cenis Tunnel	684
Weather Influence and Signal Design	685
Letters to the Editor	686
The Scrap Heap	688
Overseas Railway Affairs	689
Fifty Years in Rail Transport	690
Inertia Effects on Locomotive Connecting Rods and Reciprocating Parts at High Speed	691
Modernised Sleeping Cars, G.W.R.	693
Systematic Maintenance of Machine Tools	694
A Difficult Bridge Renewal, Metropolitan Line, L.P.T.B.	695
Restoration of the "Slovak Arrow" Service	696
Reconstruction of the Mont Cenis Tunnel	697
Personal	699
G.W.R. Plant Demonstration Train	700
Questions in Parliament	701
Notes and News	703
Official Notices	703

In view of an increase in our paper ration from the beginning of November, we are now prepared to accept a limited number of new home subscribers. The arrangements for accepting all new overseas subscriptions remain unchanged

Now readyPrice 5s.**IMPROVING LONDON'S TRANSPORT**

A publication of The Railway Gazette describing the new works schemes of the L.P.T.B., the L.N.E.R., and the G.W.R.

With a foreword by

The Rt. Hon. Lord Ashfield of Southwell

62 diagrams and maps, 97 photographs, and folding plate

THE RAILWAY GAZETTE

33, TOTHILL STREET, WESTMINSTER, S.W.1.

Stock Exchange Condemns Railway Terms

ON December 12 the Council of the London Stock Exchange took the unprecedented step of making representations to the Chancellor of the Exchequer as to the basis of compensation it is proposed to pay to railway stockholders upon nationalisation. The Council stated authoritatively that Stock Exchange quotations were not related directly to the value of a company's assets or to the amount of its profits, and consequently they could not form a fair and equitable, or a rational, basis for compensation. The Stock Exchange was like a scientific recording instrument, which registered not its own actions and opinions, but those of private and institutional investors all over the world. These actions and opinions were the result of hope, fear, guesswork, intelligent or otherwise, good or bad investment policy, and many other considerations. Because of the doubts and uncertainties of recent years, Stock Exchange quotations were peculiarly unsuitable as a reference basis for the valuation of British railway securities. The Council gives as its considered opinion that the only fair and equitable method of arriving at a proper basis for compensation, failing agreement between the parties, is by arbitration. It also strongly urges that the compensation proposed for London Transport 3 per cent. stock, 1967-72, should be reconsidered, and points out that whatever legalistic arguments may be brought forward to justify the present proposal, the broad effect on the public mind would be one of repudiation of a British Government guarantee.

Statistics of Trade Bill

A further spate of form filling will be released on trade and industry as a result of the proposals contained in the Statistics of Trade Bill which has been presented in the House of Commons by the President of the Board of Trade. The objective of the measure is to enable Government Departments to obtain more readily the information required for the appreciation of economic trends and to consolidate and amend the law relating to the census of production, as well as to provide for a census of distribution and other services. The range of information which a person may be required to furnish is extremely wide. It includes the nature of an undertaking, including its association with other undertakings; persons employed; kind of employment, remuneration, and hours worked; output, as well as deliveries and services provided; articles acquired or used, orders, stocks, and work in progress; outgoings and costs, including work given out to contractors, depreciation, rent, rates, and taxes, other than taxes on profits and capital expenditure; the receipts of, and debts owed to, the undertaking; the power used or generated; fixed capital assets, plant, and so forth. The Ministers or departments which may require the information include the Treasury, a Secretary of State, the Admiralty, Board of Trade, Minister of Fuel & Power, Minister of Agriculture & Fisheries, Minister of Health, Minister of Labour and National Service, Minister of Transport, Minister of Supply, Minister of Food, Minister of Works, Minister of Civil Aviation, and Minister of Pensions.

Decline in Trade Union Membership

Membership of trade unions in the United Kingdom at the end of last year was 7,803,000, a decline of 223,000, or 2.8 per cent. as compared with the previous year. The reduction was the result mainly of women leaving industry; the number of women members fell by 214,000, or 11.8 per cent. The total number of trade unions was 965, compared with 952 the previous year; this reduction was caused in part by the amalgamation of the mining unions into the National Union of Mineworkers, and constitutional changes in a group of Civil Service unions. The *Ministry of Labour Gazette* points out that, although the total number of unions is large, 15 unions with memberships of 100,000 or more account for nearly two-thirds of the membership, and 28 other unions with 25,000 or more represent another fifth. There were 477 unions with fewer than 1,000 members each, and together they represented less than 2 per cent. of the total. Unions catering for the railway service had a total membership at the end of last year of 572,430, which compared with 566,000 at the end of 1944. The three railway trade unions at the Trades Union Congress this year represented 562,208 workers, and the 11 other transport unions a membership of 1,088,781.

Home Railway Traffic Receipts

There was again a downward trend in the traffic receipts of the four main-line railway companies and the London Passenger Transport Board during the four weeks ended December 1. Compared with the similar period a year ago, notwithstanding the increase in rates and charges from July 1, 1946, the overall decline in traffics for the four weeks was £1,239,000. Passenger takings accounted for £1,279,000 and merchandise receipts for £187,000 of this fall. In the following table the receipts for the four weeks of this and last year, and also for the 48 weeks of 1946 and 1945, are compared:—

FOUR WEEKS ENDED DECEMBER 1, 1946

	1946	1945	+ or -	Per cent.
	£000	£000	£000	+ or -
Passengers	13,334	14,613	- 1,279	- 9.5
Merchandise	8,314	8,501	- 187	- 2.2
Coal and coke	4,311	4,084	+ 227	+ 5.2
Total	25,959	27,198	- 1,239	- 4.7

AGGREGATE FOR THE FORTY-EIGHT WEEKS OF THE YEAR

	1946	1945	+ or -	Per cent.
	£000	£000	£000	+ or -
Passengers	186,924	194,538	- 7,614	- 4.0
Merchandise	97,162	113,453	- 16,291	- 16.7
Coal and coke	46,532	44,785	+ 1,747	+ 3.7
Total	330,618	352,776	- 22,158	- 6.7

As will be seen from the table, total traffic receipts are now £22,158,000 less than at this time last year.

Overseas Railway Traffics

A decrease of ps. 82,000 in the week ended December 7 gave a net decline of ps. 72,000 in Buenos Ayres & Pacific traffics for the fortnight under review. Heavier setbacks in the same week were recorded by the Buenos Ayres Great Southern and the Buenos Ayres Western, but an improvement of ps. 349,000 in the preceding seven days resulted in B.A.G.S. traffics for the fortnight being only ps. 15,000 behind last year. On the Buenos Ayres Western, however, the fortnight shows a loss of ps. 76,000. Central Argentine traffics maintained their improvement throughout the fortnight, although on a reduced scale in the week ended December 7, the combined increase for the two weeks being ps. 156,075. The decline in Central Uruguay traffics, which began in the week ended November 23 after a strike had broken out on the system on November 21, has continued during the fortnight ended December 7, in which period the loss was £9,853. Some traffic results are compared below:—

	No. of week	Weekly traffics	Inc. or dec.	Aggregate traffics	Inc. or dec.
Buenos Ayres & Pacific*	23	2,400	- 82	51,429	+ 3,877
Buenos Ayres Great Southern*	23	3,447	- 364	75,350	+ 3,900
Buenos Ayres Western*	23	1,260	- 104	27,925	+ 1,271
Central Argentine*	23	3,142	+ 5	72,023	+ 2,316
Canadian Pacific	49	1,433,750	- 5,250	68,321,000	- 5,890,500

A succession of C.P.R. increases was broken in the 48th week by a decline of £85,500, but there was a considerable recovery in the next seven days, so that the loss on the fortnight did not exceed £90,750.

The Extent of Railway and Bus Co-ordination

In delivering the second Henry Spurrier Memorial Lecture before the Institute of Transport on December 9, Mr. J. S. Wills, M.Inst.T., Managing Director, British Electric Traction Co. Ltd., speaking on "Goodwill in Road Passenger Transport," referred to the degree to which co-ordination between the railways, bus companies, and municipal bus undertakings had been carried. The facilities met almost every conceivable combination of local circumstances. Should a landslide interrupt a railway service in any part of the country, arrangements were already made for buses to be rushed to the scene to convey passengers between the two most suitable railway links. Many station yards were in use as bus stations, and details of local bus services, competitive or otherwise, were obtainable from any railway booking or inquiry office. Few among the public appreciated the extent of this co-ordination—achieved despite many difficulties—but the effect on the goodwill of operators would be apparent if there had been failure to institute such facilities or if the existing facilities were withdrawn.

The "Freedom" of Local Road Hauliers

Statements on the Transport Bill (the second reading of which commences this week and to which reference will be made in our next issue) issued by the Road Haulage Association point out that although certain short-distance road traffics are excluded from the nationalisation proposals, the State monopoly, in taking over the railways and their controlled road-transport concerns, in fact, will compete with the carriers of these special traffics as from January 1, 1948. Moreover, in absorbing concerns which deal specifically with long-distance traffic, but have fleets including a number of short-distance units, the Government will put itself into direct competition with the independent haulier for hauls within the 25-mile radius. The result must be a scramble for short-distance work. Few so-called "free" hauliers will be able to give in this radius the economic and efficient services now rendered. The unfairness of the permit system is exemplified by the fact that any permit to exceed the 25-mile radius must be obtained from the very organisation with which the "free" operator is in competition, and there is no appeal. The Road Haulage Association, therefore, asks the pertinent question: is it likely that, faced with the need for paying its way, the Commission will grant permits to competitors?

* * * * *

British Railway Stockholders' Protest Meeting

On Friday last, members of the British Railway Stockholders Union met at the Caxton Hall, Westminster, and passed a resolution calling for a public inquiry into the proposed nationalisation of railways, and also condemning the proposed terms of compensation. A brief report of the proceedings is given elsewhere in this issue. Sir Charles Stuart-Williams, Chairman of the British Railway Stockholders Union, criticised the compensation terms as "grotesquely unfair" and as "confiscation." Sir Herbert Williams, who proposed the resolution, expressed the view that it was high time to call a halt to the inroads on personal liberty being made by the Government. He doubted, too, whether those who presumed to run the railways in the future would be successful if they were to attempt to obtain jobs on their merits, with the railway companies under private enterprise. Sir John Mellor, M.P., warmly criticised the decision of the Government to take the Committee stage of the Bill in Standing Committee instead of on the floor of the House, and said that in his view this was a breach of the undertaking which had been given by the Government relating to highly contentious Bills and those involving constitutional issues. The abrogation of the Government guarantee on London Transport 3 per cent. stock 1967-72 in his view raised a constitutional issue.

* * * * *

The North London Railway Centenary

The incorporation on August 26, 1846, of the East & West India Docks & Birmingham Junction Railway (from 1853 called by the happier and less cumbersome name of the North London Railway) is one of the many events of which the centenary has fallen during the past year. Before the adoption of the more familiar title, the line was sometimes called the Camden Town Railway, as obviously the legal name (designed to indicate that the undertaking was a link between the docks and the London & Birmingham Railway) was unlikely to achieve popularity. This railway, short in mileage, but rich in historical interest and importance, formed the subject of a short history by Mr. Michael Robbins, first published in 1937. We then said that he had done his work well, and added that few would be disposed to dispute his conclusion that the North London Railway had strong claims to be considered the most efficient of the smaller British railways. Now he has produced a revised edition* to mark the centenary, which bears all the improvements that might be expected from a decade of further study by a careful author. As long ago as 1850, a quarter-hourly passenger train service was being provided. It is impracticable in a few words to outline the many points of interest of the North London Railway, which was the first to have continuous brakes in everyday use (1855);

* "The North London Railway." By Michael Robbins. Chishurst, Kent: 30, White Horse Hill, 7½ in. x 5 in. 30 pp. + 8 pages of illustrations and maps. Price 3s. 6d.

was the scene of a famous murder with repercussions on rolling stock construction; had many noteworthy officers (including William Bridges Adams, the inventor of the fishplate); and played a distinguished part in the preparations for D-Day.

Railway Lighting Practice

Numerous developments in railway lighting practice have been recorded in our pages during recent months, notably in respect of passenger coach illumination with fluorescent tubes. A railway journey at night will show that there is plenty of room for improvement outside the trains as well as within, and the lighting of stations, with their nameboards, train indicators, and other signs is a matter to which increased attention is being paid. The subject concerns not only passengers, but all who work on railway premises, and was dealt with in detail in a paper presented on December 10 to the Illuminating Engineering Society by Mr. A. Cunningham, and Mr. G. W. Goldo. The authors described recent methods of lighting the interior of box wagons in goods sheds, and locomotive inspection pits, with reference also to a trolley device for illuminating the sides of locomotives during examination in the shed. On the subject of signal boxes, the paper discussed the modern tendency to minimise lighting to ensure sufficient "dark adaptation" of the eyes for viewing train movements outside. We hope to refer to the paper in greater detail in a future issue.

L.M.S.R. Sleeper Renewals

Although the L.M.S.R. has conducted, and is conducting, extensive experiments with alternative materials, in view of the shortage of suitable timber, the familiar wooden sleeper still constitutes the mainstay at its track, and comprises well over 40 million sleepers. Some 200 men are employed at four depots in turning out the 1½ million sleepers a year required for renewals, as well as half-a-million cu. ft. of crossing timbers and bridge timbers. The standard L.M.S.R. sleeper is 8 ft. 6 in. long × 10 in. × 5 in., and weighs 85 lb. unchained; with chairs it weighs 130 lb. Sleepers are laid at 2,112 to the mile. The timber is imported from British Columbia and is mostly Douglas fir. After open air stacking for seasoning, it is adzed and bored and then treated with preservative for three hours under a pressure of 200 lb. per sq. in. Until recently, creosote only was used for preserving the L.M.S.R. sleepers and bridge timbers, but at one of the main L.M.S.R. shops (Ditton Junction) the treating is now done with Wolman salts, which were used extensively in Germany before the recent war. At Ditton also a new preserving cylinder for bridge timbers and telegraph poles has just been installed, and two other cylinders for sleepers are in course of construction. When the various improvement works at Ditton are complete, this will be among the finest plants in the world.

British Rails in the U.S.A.

The note on Pennsylvania track published in our November 29 issue (page 623) was a reminder that in 1864, when that railway desired to adopt steel rails, such were not made in the U.S.A. A further reminder of early indebtedness to Great Britain for rails is provided by the announcement that the Mount Savage Shops of the Cumberland & Pennsylvania Railroad have been closed, for it was here that the first real rails were made in the U.S.A. This was in 1844, when the Maryland & New York Iron & Coal Company owned the shops. Before that time, all rails used in the U.S.A. had been purchased this side of the Atlantic, and Great Britain had actually rolled the first flat-bottom rails, to American designs. The first American rolled rails, of 1844, have since been acknowledged by the Franklin Institute of Philadelphia in the award of a silver medal for the achievement. This first Mount Savage rail weighed 42 lb. to the yd., and 500 tons were laid on the Maryland & New York Company's own railway. Later in the same year, 50-lb. T rails were rolled for a railway running from Fall River to Boston. Subsequently, beginning in 1846, the Baltimore & Ohio Railroad became a substantial customer. Until 1844, the only effort of the U.S.A. in making its own rails had been the preparation of "strap" rails for surfacing timber running rails.

Early Training of Railway Officers

ELSEWHERE in this issue readers will find a statement of Mr. H. J. Peacock's views on the subject of training for railway work. Speaking from his long experience of the traffic departments of the Great Western Railway, Mr. Peacock expresses the opinion that "the clever lad entering the service from school, discovered early for his merit and thoroughly trained," ultimately becomes a more efficient and effective officer than a university man recruited at the age of 22 or 23. The "thorough detailed knowledge that the ranker has had in the seven or eight years" of his junior service is thought to be important, and Mr. Peacock suggests that at 30 years of age the young man is "well trained in the practical work of running a railway by having had a share in the job of doing so."

As hundreds of railway clerks spend years on routine work and never rise above class IV grading, Mr. Peacock evidently assumes the existence of special arrangements for the selection and training of promising members of the staff. We believe that all the companies had such arrangements in operation before the war, and in our issues of November 22 and 29 we described in detail how the L.N.E.R. has modified its system to suit present-day conditions. One great merit of the L.N.E.R. scheme is that persons selected from the staff go through exactly the same training as recruits from the universities. In normal times, the aim was to have an equal number of apprentices of the two types in training. At the end of the training period, equal opportunities of promotion were open to all. Personal qualities, as well as the knowledge gained of railway working, decided the rate of future advancement.

Our own feeling is that, in the years to come, the management of our railways will require all the ability which can be brought to bear on its problems. It would be a mistake to exclude men who have had the advantages of a university career. If these older recruits are selected wisely, anything they may lose through lack of early contact with railway business should be counterbalanced by gains in breadth of outlook and powers of judgment. No risk need be involved in taking university graduates for training, if each entrant is notified that he will not be retained in the service unless he develops satisfactorily during the probationary period. If he fails to adapt himself to his new environment, he should be rejected, whereas an apprentice from the staff who does not make good should simply go back to an ordinary clerical post and lose his chance of special promotion.

International Transport and Communications

IN September, 1940, Chatham House entrusted Sir Osborne Mance with the preparation of a study of international transport and communications. It was decided to issue the work in separate sections, and five volumes have been published on Telecommunications, Air Transport, River and Canal Transport, Sea Transport, and Rail Transport. A sixth volume has now been published, reviewing the wider aspects of the transport problems which arose after the first world war, and, in the light of the experience gained in handling these questions, outlining means for developing international co-operation in the period of reconstruction after the second world war. The book is entitled "Frontiers, Peace Treaties, and International Organisation,"* to indicate the three parts into which its contents are divided. Sir Osborne Mance takes entire responsibility for the opinions expressed, though he acknowledges the benefit of advice received from Sir Ralph Wedgwood during the writing of the book. It will be remembered that Sir Ralph Wedgwood wrote the study of "International Rail Transport" reviewed in our September 13 issue.

Sir Osborne Mance's chapter on frontiers is concerned with the transport factors which should be taken into account in the process of revising state boundaries. In his opinion, the Paris Peace Conference of 1919 did not give enough weight to such considerations in determining new frontiers. He explains the principles that should be applied in settling transport rights through intervening states and in giving access

to seaports. Then comes an analysis of the transport articles in the peace treaties. The original intention was to lay down a code of behaviour in questions of international transport, but difficulties occurred in reconciling the conflicting claims of the Allied Powers, some of whom were not disposed to accept obligations even as between allied countries. Between the two wars, progress was made in elaborating transport codes so that any new treaty should be shorter than the old one and suggestions are put forward for rearranging the articles affecting transport.

Part III of the book opens with an account of international transport organisations existing in 1939 and goes on to discuss the co-ordination of this machinery by grouping transport activities in relation to the Economic & Social Council of the United Nations. After summarising the conclusions reached in previous volumes about the organisation required for each form of transport, Sir Osborne Mance shows by means of a chart how these different arrangements could be fitted into a comprehensive plan. For example, railways and waterways would be subject to an Inland Transport General Conference, linked to the Economic & Social Council through the secretariat. Full use would be made of the International Railway Union and of the International Railway Congress Association, with their technical committees. As explained in our August 30 issue, both of these bodies have resumed operations. The complete scheme represents an imposing structure, involving the creation of some 20 new bodies concerned in various branches of transport. The possibility of international control on these lines is recognised to depend on the success achieved in satisfying countries with individualist as well as state-owned transport.

Our own feeling is that the wise course will be to let existing organisations develop in a natural way and to legislate for fresh problems as they press for solution. The United Nations have their work cut out at present to avoid famine in many regions and to settle procedure about international trade and reconstruction funds. In the meantime practical bodies like the European Timetable Conference are doing effective work, as described in our issue of November 1. Nothing can be better calculated to form the growth of mutual confidence, which Sir Osborne Mance regards as essential to international co-operation. His book is not easy reading, but is based on extensive research into abstruse subjects and should be useful to everyone who is interested in expediting the movement of passengers and goods between all countries as one of the surest methods of restoring peace and prosperity to the after-war world.

* * * * *

U.S.A. Railway Rates and Charges

ALMOST simultaneously with the meetings of our Charges (Railway Control) Consultative Committee, hearings were held before the Interstate Commerce Commission on the appeal of the U.S.A. railways for an overall increase in freight rates of 19.2 per cent. The proposed increase would not be uniform, but would vary according to the class of traffic, as shown below:—

On animals and products	...	...	...	25 per cent.
On less-than-wagon load freight	...	...	25	
On manufactures	...	...	22.1	"
On products of agriculture	...	...	21	"
On products of forests	...	...	18.9	"
On products of mines	...	...	11.9	"

The Interstate Commerce Commission has granted an interim emergency increase of 6.5 per cent. in freight rates, effective as from July 1, but, despite that relief and record peacetime traffics, prospects for future railway earnings are not bright. Towards the end of September, the position of the rail carriers was explained to the Commission by Dr. J. H. Parmelee, Director, Bureau of Railway Economics, with the aid of 36 statements and charts which summarise the results of railway operations over a long period of years and deal in detail with trends during recent times. These railway statistics were supplemented by seven statements analysing wholesale prices during the years 1939 to 1946, so as to bring out the relationship of freight revenue to commodity values. Through the courtesy of the Reference Librarian of the Bureau of Railway Economics, we received a copy of Dr. Parmelee's testimony early in October.

After making a careful study of this evidence, we feel

that any railway administration might take it as a model for presenting a case for reviewing the level of rates and charges, though we doubt whether other countries could produce the relevant statistics so closely up to date as the Association of American Railroads is able to do. There follows a note of some of the most telling figures put forward in support of their case.

For the first seven months of 1946, freight revenue has decreased by 24.1 per cent. and passenger revenue by 19.1 per cent. Net income after charges for this period amounted to \$4.7 million, a sharp contrast to the \$411 million of net income in the corresponding seven months of 1945. Total operating revenues decreased for 13 successive months, beginning with July, 1945, and continuing through July, 1946. Total operating expenses showed a decrease of 3.1 per cent. for the seven months ended July last, but, based on the expected level of employment and operations for 1946, total costs have increased by more than \$2,166 million a year since 1939.

Of that total, \$1,655 million reflects greater labour costs, due to higher wages, vacation allowances, and payroll taxes. The balance represents the increase in prices of railway material and supplies. The cost of fuel alone has advanced by \$197 million a year since 1939; the increase in the pit-head price of coal is 69.5 per cent.

As costs and rates stand now, the railways expect a net income of only \$29 million in 1946, though carry-back tax credits may bring the total to \$203 million. These figures are far below the \$450 million earned in 1945, and the \$500 million which the railways should earn annually, on an average, to maintain their efficiency as a going industry. The prospect for 1947 is deplorable. The sole question is whether the net deficit will be \$225 or over \$300 million. Even on the basis of the total rate increases advocated by the railways, their 1947 net income would be round about \$250 million, or one half the amount needed to keep transport services up to the level of present-day requirements.

During the war period, the cash dividends paid to railway stockholders averaged less than 3 per cent. per year on the capital stock outstanding. Substantial reserves were accumulated, but, in the first seven months of 1946, more than \$300 million were drawn from these reserves to meet necessary expenses not covered by earnings. The return of peacetime operating conditions has brought about a greater decrease in revenue-producing ton-miles than in freight train-miles or wagon-miles. The inevitable conclusion is that railway freight charges are badly out of line, both with operating costs and with prices of commodities generally. Indeed, an increase of 38 per cent. in the rates on all commodities would be required to maintain the relationship between freight revenue and the value of the freight carried as it was in 1941. This calculation is the last of Dr. Parmelee's exhibits and is a most ingenious way of demonstrating the railways' need for additional freight revenue.

As we go to press, we learn that the Interstate Commerce Commission has granted an increase of 17.6 per cent. in freight rates, superseding the July advance of 6.5 per cent. In due course it will be instructive to compare this decision with the advice which our Charges Consultative Committee submits to the Minister of Transport.

The Mont Cenis Tunnel

FOR the past three years the Mont Cenis Tunnel, the fifth longest railway tunnel in the world, and the one which enabled a direct railway link to be established between France and Italy, and also made possible a short connection between the United Kingdom and Italy, has been out of regular service as a result of war activities. In November, 1943, its strategic value to the Germans was nullified by the efforts of French patriots, who were then reported to have succeeded in causing an explosion which resulted in the collapse of the tunnel for a length of some 150 to 200 metres (say 490 to 650 ft.) at the Modane end. The damage subsequently was reinforced by Allied air bombardment both from this country and the Mediterranean. The tunnel is approached by the Maurienne Valley, along which the German troops retreated in 1944, and in retiring from Modane to the Alpine crests the Germans blew up the entrance to the tunnel in a substantial way, and it was not until their withdrawal in May,

1945, that it was possible even to inspect the extent of the damage. The reconstruction works forms the subject of a short illustrated article this week. The Mont Cenis Tunnel was re-opened for traffic on September 1 last, and enabled this important international traffic route to be restored. Some quantitative idea of its value may be gained from the fact that the goods traffic through the tunnel in the period between 1919 and 1930 averaged some 45,800 wagons a year in regard to Italian imports, and some 22,200 wagons a year for Italian exports.

When the tunnel was opened in 1871, its length was 42,057 ft., but a sliding movement of the mountain slope at the north (French) end of the tunnel made it necessary to modify that section in 1881, whereby the tunnel was lengthened by some 2,624 ft. For 19,780 ft. the tunnel is in French territory, and its highest point is 4,245 ft. The north entrance is at a height of 3,765 ft., and the southern entrance at 4,162 ft. The tunnel is heavily graded. It is wholly brick lined, and the line through it is double track. Construction was begun on the Italian side by the then Kingdom of Sardinia in October, 1857, when the Turin-Bussoleno railway line (28 miles), which had been opened in 1854, was extended westward.

France became interested in the scheme only in 1859, when it took over Savoy. The original convention between France and Sardinia envisaged a contribution of fr. 19,000,000 to be paid by France towards the cost of construction, with a substantial premium if the tunnel were opened before the end of 25 years from 1857. As a matter of fact, it took but 13 years to complete. A revised convention was concluded between the two countries in 1868, whereby France undertook to anticipate her payments, while Italy pledged herself to complete the construction before December 31, 1871. The final cost of the tunnel proved to be lire 41,000,000. Some 2,000 workers were employed at each end, and connection was made on December 25, 1870. The French authorities completed their line as far as Modane, the northern entrance of the tunnel, in 1871, and the tunnel was opened for traffic on September 17, 1871.

Work on the tunnel had been accelerated through the invention of the pneumatic drilling machine by Germain Sommeiller, who was the leading engineer in the scheme. The first compressed-air drills replaced hand drilling in 1860. The tunnel does not pass actually under the Col de Mont Cenis, which lies some 17 miles to the north-east of it, but is located under the Col de Fréjus, which has an altitude of 8,323 ft., and on the Continent the tunnel is often called the Fréjus Tunnel.

The Mont Cenis Tunnel lies on the main route from south-eastern France to north-western Italy, and connects the former P.L.M. railway system with the Italian State Railways. Suggestions for working the tunnel section electrically were made some time before the 1914 war. It had been recognised, when the Simplon route was being completed, that electric traction would have to be adopted sooner or later in all the Alpine tunnels, since its advantages in such circumstances were so very obvious.

Plans were made eventually for electrifying on the low-frequency a.c. three-phase system, much favoured in Italy, the line from Modane (the French frontier station), through the tunnel to Bardonecchia (the Italian frontier station), and on to Bussoleno, on the main line to Turin. Electric trains began running over the northern part of the route on the Italian side, between Bardonecchia and Salbertrand, in July, 1912, and from the latter place to Bussoleno in May, 1913. Some time was involved in coming to terms with the P.L.M. authorities about extending the electric working through the tunnel, but this was effected in May, 1915. The tunnel ventilation system, installed in 1903 to replace the original faulty system, was then dismantled.

It may be remembered that the first to build a railway across this route, though not in a tunnel, was John Barracough Fell, an English railway engineer who built a number of railways also in New Zealand, Brazil, Switzerland, and elsewhere, as well as in Italy. Fell secured a concession for a railway across the Mont Cenis region and established a railway with a central grip rail along the Mont Cenis road while the tunnel was under construction. Further details of this were given at page 516 of our issue of November 19, 1943.

Weather Influences and Signal Design

IN sending proposals to railway managements for what they consider to be improvements in signalling apparatus and its operation, many inventors forget that such equipment must frequently operate under extremely unfavourable weather conditions, sometimes low down amidst the dust and vibration of the permanent way, and at others high up on posts exposed to the full force of the wind. Weather conditions sometimes become so bad that only with considerable difficulty is it possible to keep some types of signalling apparatus functioning reasonably satisfactorily.

Even when less serious conditions exist, however, failures can arise which, though they cause delay only, are a decidedly unwelcome feature. The construction of items of outdoor signalling equipment so as to ensure that they shall function safely and regularly at all times is an old problem which has given signal engineers anxious hours of thought, discussion, and experiment.

From time to time, accidents arise through some piece of apparatus having been affected by frost, although the modern method of "proving" tends to safeguard against many of the sources that earlier gave rise to mishap. Perhaps the best known case in this country of widespread failure because of weather conditions—particularly bad on that occasion—was the double collision at Abbots Ripton, on the G.N.R., on January 21, 1876, when heavy snow and sleet so impeded the operation of the signal wires that a series of false clear signals resulted.

This condition would have been detected with "proving," but nothing of the kind then existed. Captain Tyler did not suggest this, but, instead, proposed the double-wire system as a cure. In due course, this was adopted by some continental countries, which still adhere to it. This matter was given added interest by a discussion at the Institution of Railway Signal Engineers on April 17 last. It followed Mr. R. S. Griffiths' paper on upper quadrant signals, prompted by a question in which doubt was cast on the efficiency of the present British standard design of upper quadrant arm. One who spoke then, Mr. D. L. Champion, a meteorologist as well as a signal engineer, presented to that institution on October 23 last a paper in which he dealt with the influence of weather conditions on the design and operation of signalling equipment.

There is no doubt that, although the subject always has been to the fore, only in recent years has it been approached from a scientific point of view. Meteorology is studied by comparatively few, so that its exact bearings on some of the problems arising in everyday signal operation probably are appreciated insufficiently.

It is, therefore, both useful and opportune, bearing in mind the more official discussions on the subject of upper quadrant signals understood to be in progress, for signal engineers to have a paper from one who has devoted special attention to the details of the problem. Quite small alterations in the design of a piece of mechanism, fitting, or attachment will affect materially its liability to be attacked by frost or other climatic phenomenon. In bygone days these considerations did not seem greatly to have influenced signal designers.

Mr. Champion argued that it would probably pay, because of the delays that would be eliminated, to give closer attention to points of small detail which could influence regularity of working more than is ordinarily realised. Apart, therefore, from the question of safety, the uninterrupted functioning of our signal equipment in all seasons is worth the spending of a reasonable amount of thought and money. There has been much experiment in recent years to obtain the most satisfactory bearings for signal arms and other spindles, with the aim of gaining immunity from weather influences and economy in maintenance costs.

These are, perhaps, the most important elements of this particular problem, but, as the paper emphasised, it is possible to design the shape of bearing supports and fastenings, as well as other items, so as to preclude the adherence of frost and snow near the spindles. Often, simple protective shields may reduce the trouble. Too much care cannot be taken, moreover, to ensure the reliable working of signalling apparatus, and Mr. Champion's contribution to this subject is both timely and serviceable.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Power from Wind and Tide

46, Bath Road, Bedford Park,
London, W.4. December 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I have read with some astonishment Sir Sam Fay's letter in today's issue of *The Railway Gazette*. I am afraid that after the aircraft engine had been stopped, his wind-driven locomotive would quickly come to a stand, as the air turbine, far from possessing any driving force, would have a braking effect. Even a head-on hurricane would be of little avail, as the relatively large frictional forces seem to have been ignored.

I should be interested to know what advantages his tide harnessing equipment holds over the more normal method of generating hydro-electric power by using a continuous flow of water such as a steeply graded river. Since both tanks would have to be comparatively shallow, they would also have to be disproportionately great in area.

Yours faithfully,
HENRY BUTLER

Cambridge. December 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—In his scheme for a locomotive driven by wind pressure, described in your December 6 issue, Sir Sam Fay evidently has allowed his enthusiasm for aerodynamics to outrun his knowledge of that branch of science.

First of all, in choosing an airscrew and aero-engine as the means of starting and accelerating the locomotive, the inventor has selected the least efficient method of propulsion that could be imagined in the circumstances. With the restricted airscrew diameter imposed by the loading gauge, he would be very lucky to get an initial thrust of 5,000 lb.wt.; in other words, about one-sixth of the starting effort of a mixed traffic steam locomotive of moderate size.

Secondly, in order to operate an air turbine capable of developing mechanical power, it is necessary for the air to be both compressed and subsequently heated. The only provision for compression in the "locomotive of the future" is the forward-facing air scoop, a device which would give a totally inadequate pressure ratio even at speeds of 100 m.p.h. or over. There is no indication either on the diagram, or in the accompanying description, of any combustion chamber for heating the air before entry to the turbine. Without a combustion chamber, the whole scheme falls into the "perpetual motion" category, and the proper place in *The Railway Gazette* for such inventions is the Scrap Heap.

Yours faithfully,
J. M.

"Tall Timbers,"
Stoke Poges, Bucks. December 13

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—In his letter published in your columns on December 6, Sir Sam Fay has described and given a sketch of a perpetual motion machine which he calls "A locomotive of the future," thus adding still another to the already large stock of these fallacious inventions. We still cannot obtain something for nothing.

Yours faithfully,
J. C. KUBALE

"Bryanston,"
Blandford, Dorset. December 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—Sir Sam Fay suggests an ingenious scheme for a locomotive driven by wind pressure in your December 6 issue. I am afraid, however, his idea will be no more successful than those of previous exponents of perpetual motion.

As all physicists and mathematicians are aware, energy must be used in the development of power, and power must be used to overcome friction in the axleboxes of a railway carriage. After the engine of Sir Sam Fay's machine has been cut out, from where is the energy necessary to overcome the friction of a train travelling at speed to come? No chemical energy is used up, and no mechanical energy is used. Any power gained by the wind pressure on the turbine blades is more than counterbalanced by the power lost by the wind pressure on the air ducts. Thus, only if the transmission of power is 100 per cent., *excluding friction*, and if there is no

friction or air resistance on the train, can Sir Sam Fay's scheme work.

The mechanical transmission cannot, unfortunately, be 100 per cent., since it is obvious that some energy is required to push the air out of the turbine if it has given all its relative kinetic energy to the blades. Assuming that the machine is about 50 per cent. efficient, including friction and air resistance, which, by the way, is a very generous assumption, and that the train is to travel at 30 m.p.h., the wind would have to pass the air intake at 60 m.p.h. Therefore, the train can go at 30 m.p.h. only if there is a 30-m.p.h. head wind blowing from the direction the train wants to go. I hardly think it is practical to build a locomotive which can go only when a gale is blowing, particularly when the gale has to be in a certain direction.

Thus, I am afraid that Sir Sam Fay's locomotive of the future is a locomotive of the very, very far distant future.

Yours faithfully,
J. G. PRITCHARD

Future of Europeans in India

15c, Venning Road,
Jubbulpore, India.
November 28

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—I would be grateful if you could help me to obtain a post on any railway outside India, due to the uncertainty of what the new Government will do with Europeans when they take over India in the near future. My life history is as under:—

- (1) Born in Frittenden, Kent, on January 5, 1901.
- (2) Educated public school, Cranbrook, Kent; passed the 7th standard in 1915.
- (3) Joined the R.F.A. on April 1, 1915, as a man; saw service in Gallipoli and Mesopotamia.
- (4) Discharged on August 31, 1922.
- (5) Joined the G.I.P. Railway as a fireman on September 1, 1922.
- (6) Passed my driver's examination on January 27, 1927, and was sent out as a driver on January 28, 1927.
- (7) Transferred to the Control on September 1, 1929.
- (8) Promoted as an Assistant Controller in January, 1930, having passed the examination with marks 357 out of 440.
- (9) Promoted to Deputy Controller, Bombay, on July 1, 1941.
- (10) Released for military duties on September 5, 1941.
- (11) Worked as Traffic Inspector on the Iraqi State Railways from 1942 to 1944.

(12) Released from Military Duties on June 19, 1944, being recalled by the G.I.P. Railway, due to their being short of trained hands. Started work again as Deputy Controller on June 20, 1944, straight from overseas, without a day's leave, and posted to Jubbulpore.

(13) Acted as Chief Controller as and when required to do so.

I trust these (full) details will suffice for you to recommend me for a post outside India.

Yours faithfully,
L. DUNGEY

1,500 Years of Speed Progress

Ceardach, Roddinghead Road, Whitecraigs,

Renfrewshire. December 3

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—The great Sir Robert Peel of "Peeler" fame and the repealer of the Corn Laws, when speaking of the great changes which the railways had brought, referred to a journey he had made to Rome in the early eighteen thirties by the same means of transport as had Julius Cæsar in B.C. 55—horse, sail, and coach—and that ten years later he had made the same journey by steam train and steamship in one tenth of the time. I wonder if you can give me a reference to the exact language used and the date. I had it all a long time ago, but, like some other of my former railway things, it has gone, if not with the wind, into some place where I cannot now find it. Yesterday in the Mitchell Library in Glasgow I went through four volumes of Sir Robert's speeches in the House of Commons. It was like looking for the proverbial needle in the proverbial haystack. The thought that you might be able to help me occurred to me then. I therefore write to you hopefully.

I lived in the railway (or should it be off the railway?) through two wars, and was in the thick of the L.M.S.R. amalgamations this side of the Border, and that strange fight against the independence offered Scotland. The fights for positions after 1922 were just horrid. The L.M.S.R. had three General Managers in less than six years—Watson, Burgess, and then

Stamp. I hope that in the early years of the coming New Order such will be avoided—vain hope? When Caley and G. & S.W.R. junior clerks found themselves housed in the same room, real fights with real hard hitting were for a time common between and among them.

Why do newspaper Editors describe a "sacking" as a re-
trial? *Veritas* is a good plea in answer to a libel action.

Forgive the trouble.

Yours faithfully,

JAMES WILSON

[Mr. James Wilson, who was Assistant Solicitor of the Glasgow & South Western Railway, and became Solicitor (Scotland) of the L.M.S.R. in 1926, is quoting a story which has been told many times and in many forms, with differences of detail. We cannot trace that Sir Robert Peel himself made such a remark (although one of our readers may be able to do so) but obviously it should not have referred to Julius Caesar. So far as we are aware (see *De Bello Gallico*) Julius Caesar did not make any fast journey to or from Rome in connection with his two unsuccessful invasions of Southern England. Incidentally, Sir Robert Peel's journey was from Rome. The circumstances are that in 1834 William IV dismissed his ministry, as he objected to its policy, and this was the last occasion in which the Crown acted in this way. The Duke of Wellington wished to invite Peel to assist him in forming a new Government.

The Court Mercury was sent to find Peel, and found him at Rome on November 25, 1834, at a ball of the Duchess or Torlonia. He posted back to England regardless of cost, and arrived on December 8; the journey took 13 days. This was the same time that it took a Roman official, travelling with similar urgency, 1,600 years earlier.—ED., R.G.]

Railway Inspection

64A, Longridge Road,
London, S.W.5. December 7

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—Some details can be added to Mr. J. G. Holmes' letter in your December 6 issue. Interlocking of points and signals at junctions was first enforced by the Board of Trade in 1859. In that year, the Hampstead Junction Railway, authorised in 1843 to run from Willesden, L.N.W.R., to the North London Railway near Camden Town, was ready for opening; but after an inspection in October, Colonel Yolland, the Board of Trade officer, recommended, and the Board agreed, that the opening certificate should be withheld until a mechanical arrangement "by which it would not be possible for a signalman to give such contradictory signals as to cause a collision" should be adopted in the Kentish Town Junction signal box at the point of junction with the North London line.

The North London Railway, therefore, instructed a firm of

Publications Received

End of a Chapter.—There is much interesting reading in a book published recently by Thos. W. Ward Limited, Albion Works, Sheffield, showing how the resources, experience, and specialised knowledge of a big industrial undertaking were mobilised for war production. The story is not one of spectacular or unusual achievements. It aims to be a simple record of the part played by this firm and its associated companies in the common war effort, but, although presented without dramatisation, the narrative is an inspiring story of adaptability and sustained effort, sometimes under very trying conditions. The text, accompanied by excellent photographs, covers, among other subjects, the quest for scrap iron and steel, foundry supplies, roadmaking, etc., and throughout emphasises the fact that all our efforts would have come to nothing without uninterrupted distribution of supplies. The task of keeping transport moving during the war was no easy one. In the normal way, something like 2,000 railway wagons and 200 vehicles were owned and operated by the Ward organisation, but in the war years, in addition to maintaining its own transport, the firm also completed the repair of some 50,000 railway wagons, while its rail department

worked continuously on the construction of sidings for the multiplicity of new factories which were being built, and in supplementing existing installations to fit them for heavier traffic.

Ingegneria Ferroviaria.—In 1900 an Italian professor, Signor Leonardo Loria, founded at Milan an association of railway engineers known as the Collegio Nazionale degli Ingegneri Ferroviari Italiani. Its headquarters were moved to Rome in 1906 after the state had taken over the principal privately-owned lines. In 1910 it began publication of a journal entitled *Ingegneria Ferroviaria*, and in 1912 appeared—apparently in its stead—*Rivista Tecnica delle Ferrovie Italiane*, which in form and some leading details considerably resembled the French *Revue Générale des Chemins de fer*, founded in 1878. The Association, which was responsible for much technical literature, brought out in 1933 *La Tecnica Professionale*, a specialised journal, in three separate editions corresponding to the traffic, traction, and civil engineering sections of the staff. *Rivista Tecnica* came to an end in 1944, but has been replaced since July 1 this year, by a new publication using the original title of *Ingegneria Ferroviaria*, which we trust will have a long and successful career.

signal manufacturers (presumably Saxby & Farmer, who had produced an interlocking device in 1856) to prepare the necessary equipment, but the requirements of the Board of Trade were not met until an apparatus, worked by a combination of levers for the points and stirrups for the stop signals, was devised by Mr. Austin Chambers, then employed in the N.L.R. locomotive department, and manufactured at Bow Works. This proving successful, the line was opened to public traffic on January 2, 1860. An account of these transactions is to be found in an "Illustrated Interview" with Mr. G. Bolland Newton, General Manager of the North London Railway, published in *The Railway Magazine*, Volume III (1899), at page 227; and there is a description of the Chambers apparatus in the same journal, Volume XXVIII (1911), at page 190.

I think it may be conjectured that interlocking was first insisted on at this particular point, then no different in layout from scores of plain double-line junctions already in existence, because of the heavy traffic passing; there was already a quarter-hourly passenger service in each direction on the North London line, as well as numerous goods trains, and a considerable traffic was to be expected along the Hampstead Junction Railway, on which another quarter-hourly service was run from 1865 onwards.

Yours faithfully,
MICHAEL ROBBINS

A Remarkable Railway Renaissance

London, S.W. December 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR.—The editorial note in your December 6 issue makes one marvel at American railway finance. Here is how things stood with the Chicago, Indianapolis & Louisville for the seven months ended July 31 this year, as compared with the corresponding period of 1945. Freight revenue was down 19 per cent., passenger revenue declined by 35 per cent., operating expenses increased by 7 per cent., and the net railway operating income showed a deficit of \$550,000 in contrast to a surplus of \$1,296,000 in 1945.

At the peak of wartime traffic in 1943 and 1944, the "Monon" ran about 1,000,000 freight train-miles a year, carrying 6,100 net ton-miles over each mile of road per day on an average. As usual in the States, passenger train-miles were fewer, at 781,000 a year, representing 5 trains a day passing over each mile of road at an average speed of 31 m.p.h.

These figures hardly support a case for spending \$25,000,000 on the property at a time when there is a risk of many once profitable U.S.A. railways going bankrupt, unless they are allowed to increase freight rates by 25 per cent.

Yours faithfully,
SCEPTIC

War at Ipswich.—A record of the part played by Ransomes, Sims & Jefferies Limited, Ipswich, in the recent war is contained in an illustrated brochure published by that firm. As might be expected, when war broke out the Orwell engine works were more concerned with the production of warlike stores than the other works controlled by Ransomes, and as a result of the enthusiasm and hard work of the staff, output increased by some 350 per cent. In addition to armament work, of which large quantities were sent out, the firm was called on to increase the output of its well-known electric industrial trucks, and heavy demands were made, also, for tractors. The famous lawn mower works at Ipswich ceased to make mowers, except machines required in connection with aerodrome works. A great effort was made, however, to increase the output of general agricultural machinery. An interesting chapter explains the Village Group movement which made available sources of labour otherwise unobtainable. These groups had over 80,000 hours of work to their credit, and no praise is too high for those women, most of them no longer young, who cheerfully handled assemblies weighing anything up to 90 lb., and whose keenness and energy proved a tremendous help to production.

The Scrap Heap

THE DUTIES OF A P.R.O.

Bristol City Council agreed recently to appoint a public relations officer at a salary of £1,000 rising to £1,200. Thirteen clauses outlining his duties were accepted. One of the duties was described as "revision of editorials," and Alderman R. F. Lyne asked: "Is it intended that the P.R.O. shall go to the newspapers and say: 'You must revise your editorials'?"

A voice from the Labour side: "It would not be a bad idea."

Alderman Lyne: Now it comes out. It is that to which I object. He moved that the words "revision of editorials" be struck out, but this was defeated.

The P.R.O.'s duties would include:—

Handling local and national publicity, publishing guides, brochures, handbooks and programmes, canvassing for advertisements, making contact with newspapers, news agencies, and trade journals, organising exhibitions, acting as liaison officer with all the city's organisations, issuing a monthly bulletin, keeping records of city events, keeping a register of persons receiving paying guests, and dealing with complaints from the public.

Alderman James Owen suggested "a few more items to give the P.R.O. something to do in his spare time."

Alderman Sir John Inskip, moving unsuccessfully that the list of duties should be defined by a special committee, de-

scribed some of the items as "bureaucracy and red tape run mad."

Alderman F. A. Parish, chairman of the committee dealing with the matter, told a reporter after the meeting that he was not sure himself what the words "revision of editorials" implied, but he agreed that they might refer to "hand-outs" prepared by corporation departments.

100 YEARS AGO

From THE RAILWAY TIMES, December 19, 1846

HOLBORN-HILL, SNOW-HILL, and FARRINGDON-STREET VIADUCT COMPANY.

—Registered Provisionally.—Capital, £200,000, in 20,000

Shares of £10 each. Deposit, 11s. per Share.

NOTICE.—The Share List being closed, no further applications can be received, and the Directors are now proceeding in the allotment of the Shares.

By order,

CHARLES THOMAS, Secretary.

December 15, 1846.

TURNTABLES, WATER-CRANES, &c.

CHESTER AND HOLYHEAD RAILWAY.—The Directors of this Company will meet at the Company's Office, 61, Moorgate-street, London, on Wednesday, the 6th day of January next, at Two o'clock, to receive Tenders for the supply of Crossings, Switches, Turntables, and Water-Cranes, according to the Specification, Drawings, and other particulars, which may be seen at the Office of Mr. Robert Stephenson, 24, Great George-street, Westminster.

Tenders to be delivered in to the Secretary, at the Company's Office, by One o'clock on the 6th of January; and parties tendering, or their authorised Agents, to be in attendance at Two.

The Directors do not bind themselves to accept the lowest Tender.

By order,

GEORGE KING, Secretary.

61, Moorgate-street, Dec. 15, 1846.

Comments on Transport Bill

The Transport Bill, if carried through, will be one of the most unjust of the many unfair measures introduced by the present Socialist Government.—From the "Daily Graphic."

DUBIOUS COMMERCIAL MORALITY

Parliament is and must be sovereign, but the procedures under the Transport Bill exploit that sovereignty to give legal justification to a method of compensation of the most dubious commercial morality.—From "The Economist."

PRINCIPAL DEFECT

The principal defect is that neither in the Bill nor in any accompanying statement of policy is there an indication of the method of co-ordinating transport facilities which the Government intend to effect by means of this elaborate measure.—From "The Times."

GLOOMY PROSPECTS

Once the Bill becomes law, the sole source of enterprise and initiative will lie, not in the salutary force of competition, but in the traditional qualities of the bureaucracy. Merely to state this is to indicate how gloomy the prospects of an efficient transport system must become.—From "The Yorkshire Post."

* * *

We regret that by an oversight the "London Laughs" cartoon by Lee on this page last week was not acknowledged to *The Evening News*.



An artist's impression of the inspection of new tools and other labour-saving appliances used by the Civil Engineer's Department of the Great Western Railway (See article and illustrations on page 700)

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OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

"Lucknow Express" Derailed

When the "Lucknow Express" was derailed between Dighwara and Barra Gopal, on the Oudh-Tirhut Railway, about 185 miles from Gorakhpur, 27 passengers were killed and 70 injured. The driver escaped.

Disturbances in Bengal

The communal disturbances in East Bengal and Bihar have not left the railways untouched, and tribute is due to railwaymen for the help they have given both the authorities and the public in evacuating refugees. At Taregna Station, 19 miles from Patna on the Patna-Gaya line of the E.I.R., about 50 people are reported to have been killed and 75 injured when a mob attacked a crowd of refugees waiting to board a train. The station itself was badly damaged.

Collision at Ongole

A serious accident occurred at Ongole, 76 miles from Bezwada on the M. & S.M.R., when No. 1 Down Madras-Calcutta Mail collided with a goods train. Thirty-six persons were killed and 81 injured. The engine was completely wrecked and the rest of the train reduced to splinters. The Maharaja of Parlakimedi, former Premier of Orissa, escaped unhurt.

Accidents have been reported, also, on the Bengal Assam Railway, where the authorities were compelled to suspend all night running of trains on certain metre-gauge sections in the Dacca and Chittagong divisions.

CHINA

Import of British "Austerity" Locomotives

Twelve British "austerity" locomotives are being sent to China in compliance with a request made by the Commander-in-Chief in Hong Kong, to expedite rail communication on the Canton-Kowloon Railway. These locomotives were operating originally in Germany, but in view of the acute position of transport in China a transfer has been effected. The import of the locomotives will ease considerably the transport problem in China, which is handicapping relief workers in their efforts to send food and medical supplies to the famine areas.

WESTERN AUSTRALIA

Derailed at East Guildford

On October 21, goods train No. 78, travelling from Midland Junction to Perth, became derailed at the east end of East Guildford Station. The train was the equivalent of 50 single wagons and a van, with a total load of 434 tons. Six single and two bogie wagons were derailed and piled up in a tangled heap of wreckage, fouling both up and down lines.

The accident was caused by a bale of wool falling from a high-sided wagon. This bale was dragged by the train until, when passing over a level crossing, it was hooked by timbers of the surface grid. The bale dislodged one of the grids, which swung under the wheel of the next vehicle, derailing it, and resulting in the others piling up.

Both main lines were torn up for approximately 30 yds., and a building at the east end of the platform was damaged by

the impact of the derailed trucks. All traffic, including suburban passenger trains, was seriously disorganized. The only casualty was the guard, who was flung against the wall of the brake van, but escaped with a bruised elbow and shoulder.

VICTORIA

Oil Storage Depots

In order to facilitate the running of oil-burning locomotives from Melbourne to Serviceton, on the South Australian border, an oil tank with a capacity of 12,000 gal. has been provided at Dimboola. This increases the number of oil depots to five. The others are at Ararat and Geelong, each provided with six tanks, totalling 144,000 gal.; and at North Melbourne and Ballarat, three tanks each, totalling 72,000 gal.

NEW ZEALAND

Rimutaka Deviation and Tunnel

Heralding the beginning of construction of what will be the second longest railway tunnel in New Zealand, the Dominion Works Minister, Mr. Robert Semple, on November 16 fired the first charge for the Rimutaka Tunnel deviation at a point in the Upper Hutt Valley, where the new line will leave the present route from Wellington to the Wairarapa farming district. The deviation and tunnel, which will take six years to build and will cost nearly £2 million, will shorten the Wellington-Masterton rail route by 9½ miles. As stated in *The Railway Gazette* of October 4, the new line will by-pass the present Rimutaka Incline, which is the only example in the world of a steam-worked line on the Fell system.

Operating costs on the new route are estimated to be reduced by £56,000 annually, and if the job goes according to the scheduled total of six years, including five for tunnel boring, the Railways Department will avoid an outlay of £300,000 for Fell locomotive and track renewal. A shaft part of the way along the 4½-mile tunnel will permit work to be carried out at four points simultaneously.

CANADA

Wage Increases for Railway Workers

The National War Labour Board on October 18 authorised wage increases of 10 cents an hour, or the equivalent, for 17,000 trainmen of the Canadian Pacific and Canadian National Railways (see also *The Railway Gazette* of October 25). In a second decision, the board also authorised a similar wage increase for other employees of the Canadian Pacific, ranging from engineers, telegraphists, and hotel employees, to steel metal workers, boilermakers, and maintenance of way workers. The increases are retrospective in both cases to June 1 this year.

In dealing with the increases for employees other than trainmen employed by the Canadian Pacific Railway, the board observed that it already had granted a 10-cent increase on August 26 for C.N.R. workers in those classifications.

Four companies were excluded from the decision on the ground that they were regional employers, and were directed to apply to the appropriate Regional War Labour Boards. They were the Algoma

Central & Hudson Bay Railway, Essex Terminal Railway, Pacific Great Eastern Railway, and Sydney & Louisburg Railways.

The increases applying to the Canadian Pacific Railway, and previously granted to C.N.R. employees, went to employees of the C.P.R. and the following subsidiary companies:

Lake Erie & Northern Railway; Grand River Railway; Napierville Junction Railway; Dominion Atlantic Railway; Quebec Central Railway; Toronto, Hamilton & Buffalo Railroad; Toronto Terminal Railway, Public Markets Limited; Northern Alberta Railways.

UNITED STATES

Santa Fe Air Powers Application

The Santa Fe Railway and its wholly-owned subsidiary, Santa Fe Skyway, are filing applications with the Civil Aeronautics Board in Washington, D.C., for licences to operate scheduled air services for freight and mail over routes within the general area served by the company's railway. At the present time Santa Fe Skyway is engaged in the transport of freight by air as a contract carrier on charter services.

Pointing out that the Santa Fe has been handling mail since 1871, the President, Mr. F. G. Gurley, said that the Santa Fe sought to place itself in a position to handle property and mail by either rail or air, as would best serve the needs of its customers, the Post Office Department, and the communities involved. The company was confident that its proposed air operations could be conducted on a profitable basis, with reasonable rates to be established by the Civil Aeronautics Board. For this reason they were waiving any subsidy in connection with the transport of mail to which they might be entitled under the provisions of the Civil Aeronautics Act. The routes on which it is proposed to operate are: Chicago-Los Angeles-San Francisco; Kansas City-Galveston; and Amarillo-Galveston.

BRAZIL

New Railway Equipment

A Decree has been signed by the President of the Republic authorising the National Department of Railways to take a loan of Cr. 130,000,000 from the Industrialists' Pension Institute, with interest at 8 per cent., and for a minimum period of 10 years, to provide for the purchase of railcars, diesel-electric trains, and equipment for electrification from Calçado (Salvador) to San Francisco (Alagoinhos); and from Mapele to Cachoeira and San Felix on the Viação Ferrea Federal Leste Brasileiro. Some 26 railcars are to be purchased at a cost of Cr. 50,000,000, and Cr. 15,000,000 is earmarked for the purchase of two composite diesel-electric trains for traffic between San Paulo and Rivera.

Loan for Diesel and Electric Development

The remaining Cr. 65,000,000 is set aside for the electrical work mentioned above, which will involve some 250 km. of track, and a 4,000 kW. power station at Aratú, with a rated output of 4,000 kW. It is intended to work this power station with fuel discovered by the National Petroleum Council in the locality. Electric traction, it is expected, will result in an economy of Cr. 124,834,400 over a period of 20 years.

Fifty Years in Rail Transport*

Some recollections and reflections

By H. J. Peacock, O.B.E.,

lately Assistant Superintendent of the Line (Cardiff), G.W.R.

I WILL briefly recapitulate some conditions that existed when I joined the Great Western Railway in 1898. Many of the passenger coaches were of the six and four-wheel variety. The corridor coach had not arrived. Relatively few eight-wheel coaches of the non-corridor type had been constructed. Gas lighting of coaches was only just coming in and rape oil was still largely used. Steam heating of coaches did not exist; the footwarmer, an iron canister filled with hot water and placed in the compartment was the only warmth supplied to the passenger on a cold day.

Communication by passengers with the driver and guard had been introduced, but it was very crude. Passengers had to put their arm outside the compartment and tug at a cord which rang a bell on the engine footplate and in the guard's compartment. A large proportion of the freight wagons was fitted only with wooden buffers. Locking of points and signals had been introduced. The interlocking and detection were entirely mechanical.

Train speeds, particularly on expresses, were almost as good as they are today, but there were not so many fast trains and no long non-stop runs. The loads locomotives were called on to handle were about half those they haul today. Passenger fares were, broadly, 1d. a mile third class and 2d. a mile first. The passenger took what was offered; he had no choice of alternative transport.

Such was the position when I joined the railway at the age of 15 at a salary of £20 a year. Even at that early age it was not long before I became dimly conscious that something was happening. The drowsy railway colossus was awakening and shaking himself out of his sloth. Railway costs were rising. Competition between companies, always fierce, was becoming fiercer. The public, where a choice of routes existed, was beginning to discriminate and select that which offered the best facilities either in speed, comfort, or fare, sometimes a combination of all three.

Change in Policy

Agitation for better pay and conditions was afoot, not very insistently or coherently perhaps, but sufficiently pronounced for small concessions to be granted. Dividends began to fall and stockholders became less complacent. The play of all these forces in combination produced a need that could not be gainsaid, and that was the necessity of earning income as distinct from collecting it. The situation was met by a change in policy which resulted in the needs of the customer being studied, and he and his business attracted. This policy gave the country more routes, better rolling stock and locomotives, faster and more comfortable trains, and a very wide range of attractive cheap fares.

What I discovered during my work in the recent war was the inestimable value of statistics relating to current facts. I found the compilation of hour to hour records of daily performance at selected

points invaluable, and though by nature I abhor figures, I would be last to decry the value of them as a means of ascertaining of essential facts about a problem and would say that without them a satisfactory solution of a problem can only be fortuitous.

In looking back over fifty years I sometimes speculate as to what single development or discovery has played the most important part in railway progress.

Influence of Electricity on Railway Operation

I express my opinion that the discovery which has most widely influenced railway progress is electricity. I recall that when I entered the service, the railway telegraph was practically the only use to which electricity was put. This had enabled the operation of the line to be carried out on the "block" principle, admittedly a great step forward towards safety.

In the administrative offices housing several departments at Bristol where I worked with about 60 other clerks, there was only one public telephone instrument installed, which the older staff avoided like the plague. Electric traction was in its infancy and only indifferently understood.

The era of electric tube railways had still to come. Progress in adopting improved mechanical appliances was being rapidly made, but few of us I think then realised the extent to which electricity eventually would be used in conjunction with mechanical apparatus or sometimes supersede it. The outstanding field in which electricity is playing a tremendously important part is in the realm of railway signalling. Here it has made a noteworthy contribution to the safety of the travelling public.

When I first entered the service there was mechanical interlocking and detection between points and signals—that is to say, points had to be correctly set and bolted in position before the appropriate signal could be lowered, but the area within which this could be done was circumscribed by the limits which long lengths of signal wire and rodding could be reliably worked manually. With electricity as the power agent this area has been tremendously extended and its limits have no longer to be kept within a signalman's vision as formerly.

The modern power signal box is provided with a diagrammatic electrically illuminated board upon which the track settings carried out by the signalman and movement of trains over them are clearly indicated. Further, not only are points and signals, but the block instruments also interlinked so that the whole sequence of block working, namely, exchange of bell signals, setting and bolting of points, their detection that they are properly set, the setting of the appropriate signals and their detection have all to be precisely carried out in proper sequence before the passage of a train can take place, and whilst this passage takes place no conflicting movement can be permitted by the signalman.

In the realm of communications electricity has worked wonders. I was able

to sit at my desk and get immediately into contact with practically any station signalbox or office throughout South Wales. I could carry on a conference with my London colleagues and principal points on the whole of the system simultaneously, just as though we were all seated around the table in my room. Imagine what this meant in wartime, when discussion and decisions in which time was the essential factor could take place so easily.

The loudspeaker system is assisting the direction of passengers at stations and helping their regulation and control. It is also used in marshalling yards, enabling the man in charge to keep in touch with his staff working a considerable distance away.

Colour-light signals are rapidly supplanting semaphores. The searchlight type of signal, brilliantly sharp, clear, and distinctive in bright sunlight as in the dark, and with great penetrating power, where installed, gives the driver an earlier intimation as to his route, and whether it is clear or not, and is of incalculable help to him in mist or fog. Without electricity the automatic train control, which can stop a moving train, would not be possible.

The minor part it plays in the comfort of passengers by providing excellent coach lighting, heating, cooking, and air conditioning is well known. It is for all these reasons that I say no other single agency has played such an important part in railway progress.

Early Training of Railway Officers

Now let me give you a few thoughts on training for industry and plunge right into the controversy as to whether the university-trained man makes a better recruit for the managerial side of industry than the man who comes up through what is termed "the mill." I realise I am touching a thorny topic, but will speak sincerely even if provocatively. In my industry we have recruited from both sources, and my observations are based on experience. There are undoubtedly merits in both methods and somewhere between them lies the answer.

I will deal with the university graduate first. I doubt whether the railway industry ever got the best men judged by academic qualifications, for the reason that these were secured by the higher branches of the Civil Service, or obtained more lucrative posts in other first class commercial and industrial undertakings. Still, we found some very good men, but that does not mean that they have proved more successful than many who have been trained by the industry itself from about 15 or 16 years of age. I exclude the professional branches of the railway industry such as Civil and Mechanical Engineering, the Law, and to some extent Accountancy Departments, but in the Operational Branch, which I know most about, and in the Commercial Branch, with which I am well acquainted, I would state as my opinion that the clever lad entering the Service from school, discovered early for his merit, and thoroughly trained, ultimately becomes the more efficient and effective.

Obviously, there must be a reason for this, as the university man starts with far greater advantages than his colleague from the ranks; he has a better-trained mind; a much wider reading at his command; a reader ability to absorb and

* Extracts from an address given at Cardiff to Mining Students of the University of Wales

(Continued on page 694)

Inertia Effects on Locomotive Connecting Rods and Reciprocating Parts at High Speed

Desirability of reducing weight to minimise inertia forces

By George W. McArd

FROM a cursory study of the work done by the pistons of any locomotive of which the wheels rotate at relatively high speed, it might appear that the major effort was transmitted in the first half of the stroke, as the higher steam pressure is exerted in this region. This is not the case, as the work expended in overcoming the inertia of the moving parts reduces the useful power transmitted to the wheels for the first quadrant of the movement of the crank, increasing the useful torque, and, therefore, the tractive effort, in the second quadrant.

Before proceeding further, however, a distinction must be made between the inertia of the reciprocating masses and that of the connecting rods. The former, moving in a straight line backwards and forwards, have a purely horizontal resistance to be overcome at the beginning of the stroke, and a resultant kinetic energy to be dissipated towards the end of their movement.

The connecting rod, however, is in a different category, as it acts as a pendulum with an additional horizontal movement. Its inertia effect, therefore, results from a combination of the one with the other; the actual figures in the example below show that the net result is to increase the inertia values at the rear end of the stroke and to reduce them at the forward end. This feature lends still further weight in favour of a ratio as high as possible of connecting rod to crank throw, and can be proved by working out an example similar to that given, but with an exceptionally short rod.

In Mr. G. R. Henderson's treatise on "Locomotive Operation" the subject is treated exhaustively from the mathematical standpoint, and the following formulae arrived at for determining the forces acting at each end of the stroke. The correction

to be made when the connecting rod is considered as a pendulum is discussed later.

	Front end of stroke	Back end of stroke
Connecting rod ...	$1.6Gs \left(1 + \frac{dr}{L^2}\right)$	$1.6Gs \left(1 - \frac{dr}{L^2}\right)$
Reciprocating parts	$1.6Gs \left(1 + \frac{r}{L}\right)$	$1.6Gs \left(1 - \frac{r}{L}\right)$

G = the weight in lb. of rod or reciprocating parts
 s = length of stroke in in.
 d = distance in in. from main crankpin centre to c.g. of connecting rod

(To determine this value, let x and y be the weights on the crosshead pin and the crankpin, respectively, when these support the rod in a horizontal position. Then $d = Lx/y$.)
 r = radius in in. of crank throw
 L = length in in. of connecting rod between centres

The above may be illustrated more clearly by taking as a concrete case a three-cylinder simple "Pacific" type express locomotive with the following values for the symbols given:—

	Inside locomotive	Outside locomotive
G—Connecting rods ...	418 lb.	557 lb.
Reciprocating parts ...	764 lb.	741 lb.
s	26 in.	26 in.
d	26 in.	33 in.
r	13 in.	13 in.
L	81 in.	121 in.

Assuming the engine to be travelling at dia./speed in a forward direction, the revolutions of the driving wheels will be at the rate of 336 per min., or 5.6 per sec., and the values of the inertia forces at each end of the stroke are given below:—

Inside locomotive
For conn. rod, inertia forces at front end lb.
 $= 1.68 \times 418 \times 26 = 18,258$
For conn. rod, inertia forces at back end lb.
 $= 1.52 \times 418 \times 26 = 16,519$
For recip. parts, inertia forces at front end lb.
 $= 1.86 \times 764 \times 26 = 36,947$

For recip. parts, inertia forces at back end lb.
 $= 1.77 \times 741 \times 26 = 34,101$
For recip. parts, inertia forces at back end lb.
 $= 1.43 \times 741 \times 26 = 27,550$

Total gives the inertia forces for:

Inside engine:—

Front end = $18,258 + 36,947 = 55,205$ lb.
Back end = $16,519 + 27,550 = 43,137$ lb.
Difference = 12,068 lb.

Outside engine—each side:—

Front end = $23,895 + 34,101 = 57,996$ lb.
Back end = $22,447 + 27,550 = 49,997$ lb.
Difference = 7,999 lb.

These values, however, must be modified to include the effect of the connecting rod pendulum action about the crosshead gudgeon. Although this still is because of inertia, it has no connection with the reciprocating motion, but entirely with the swinging action of the rod itself. As the force is radial to the crosshead pin and is the result of centrifugal action, it will act always to the rear of the engine; furthermore, as the maximum rotatory speed of the rod occurs on the dead centres, the maximum effect will be felt at these points.

Resulting Values

The resulting values at front and rear ends are obtained by modifying the coefficients used previously; the formulæ given by Henderson are $\frac{r(L-d)}{L^2}$ and $1 \pm \frac{dr}{L^2}$

Applying these gives for the

Inside rod

$\frac{r(L-d)}{L^2} = \frac{13(81-26)}{81^2} = \mp 0.109$ and
 $1 \pm \frac{dr}{L^2} = 1 \pm \frac{(26 \times 13)}{81^2} = 1 \pm 0.0515$

The revised coefficients are, therefore:—

Front end = $1 + 0.0515 = 0.109 = 0.9425$
Back end = $1 - 0.0515 = 0.109 = 0.9425$

Back end = $1 - 0.0515 + 0.109 = 0.1075$ and the inertia forces at

Front end = $0.9425 (1.6Gs) = 16,389$ lb.
Back end = $1.0575 (1.6Gs) = 18,389$ lb.

Outside rods (each)

$\frac{r(L-d)}{L^2} = \frac{13(121-33)}{121^2} = \mp 0.0782$ and
 $1 \pm \frac{dr}{L^2} = 1 \pm \frac{33 \times 13}{121^2} = 1 \pm 0.0293$

The revised coefficients are, therefore:—

Front end = $1 + 0.0293 = 0.0782 = 0.9511$
Back end = $1 - 0.0293 + 0.0782 = 0.0489$ and the inertia forces at

Front end = $0.9511 (1.6Gs) = 22,038$ lb.
Back end = $1.0489 (1.6Gs) = 24,304$ lb.

Combining, gives total inertia forces for:—

Inside cyl.:—

Front end = $16,389 + 36,947 = 53,336$ lb.
Back end = $18,389 + 27,550 = 45,007$ lb.
Difference = 8,329 lb.

Outside cyl.:—

Front end = $22,038 + 34,101 = 56,139$ lb.
Back end = $24,304 + 27,550 = 51,854$ lb.
Difference = 4,285 lb.

These totals when divided by the area of the piston ($1\frac{1}{2}$ in. dia.) give pressures per sq. in. of:—

178 lb. for the inside cyl. front end
150 lb. for the inside cyl. back end
187 lb. for the outside cyl. front end
173 lb. for the outside cyl. back end

Fig. 1 shows the theoretical indicator diagrams for the forward and backward

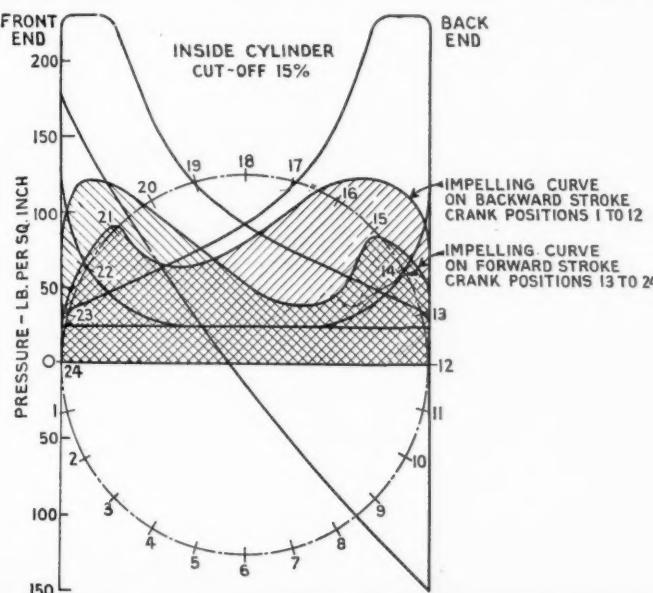


Fig. 1—Impelling curves for forward and backward strokes of inside engine on a 3-cylinder "Pacific" class express locomotive

strokes of the inside piston on the 4-6-2 locomotive previously referred to, when running at dia./speed (74½ m.p.h.). The inertia force curve is superimposed, and the resultant curve giving the pressure per sq. in. on the piston area is measured from the base line at any point in the stroke, actually impelling the crank. The total load on the piston at each point, multiplied by the effective arm of the crank corresponding to the piston position, gives a theoretical torque on the axle at that instant.

Fig. 2 is a diagram for each of the outside cylinders with the resultant pressure curves, and Fig. 3 represents the torque curves for each of the three cylinders on the locomotive under consideration. The resultant torque curve, combining the turning efforts of the three cranks, and the mean torque line for the engine are shown also.

Strain when Coasting

It will be obvious that, as the inertia forces resulting from the reciprocating masses come on the crosshead attachment to the connecting rod, all the forces are directed on the main crankpin. As they are considerable, even for dia./speed running, it is imperative that no slack should be permitted in any of the bearings. No less than 25 tons load falls on the outside crankpin when on the front dead centre, and if the speed is increased to, say, 90 m.p.h., this load is increased by nearly 50 per cent. When the engine is

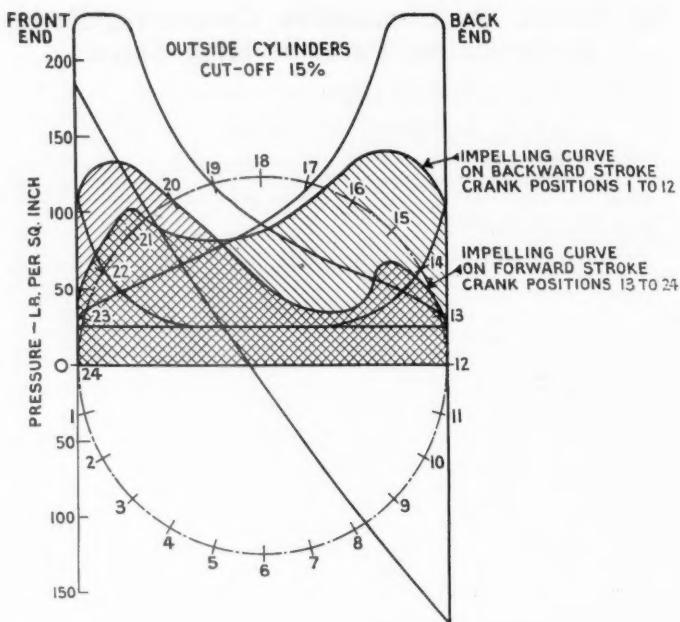


Fig. 2—Impelling curves for forward and backward strokes of outside engine superimposed on the theoretical steam indicator diagram

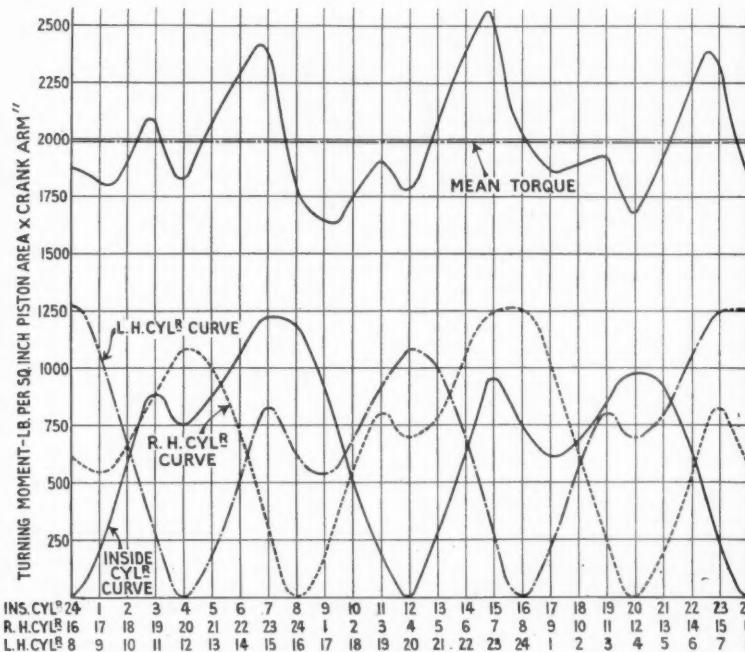


Fig. 3—Torque curves for 3-cylinder "Pacific" class express locomotive

coasting at speed, and a minimum of retardation afforded by compression for the reciprocating parts, the strain on the fastenings is particularly severe, and if cotters and other details are not locked securely, the results may be disastrous. The fitting of the cotter, which connects the piston rod to the crosshead, needs watching, as a carelessly fitted detail will not stand up to the heavy load for long.

Another sidelight on the foregoing study is the question of the weights of the reciprocating parts, as well as of the con-

nnecting rods. Often it has been observed that, whatever saving is effected on the parts to be balanced, will occur also in the actual wheel balance, and the advantage of every pound saved is, therefore, at least twofold in that the inertia forces are reduced directly as the parts themselves.

These details must be reversed in direction twice for every revolution of the driving wheel, and as this makes 336 r.p.m. for the dia./speed of running, the reversals become 672 per min., or 11·6 per sec.

As can be imagined, starting and stopping masses up to half a ton in weight at that rate is no small feat.

All unwanted material, therefore, should be removed from connecting rods, crossheads, pistons, and rods; hollow boring of the piston rods and crosshead gudgeons for high-speed stock is particularly advantageous. The type of piston adopted by the L.N.E.R., with the rod of tubular sections solidly attached to the piston, has many points to commend it, and a crosshead of welded, or semi-welded, design might be considered in place of the common steel casting.

A FILM STORY OF DUNLOP AT WAR.—How the Dunlop Rubber Company answered the demands of total war by inventiveness and planning, and by the unsparing work of the thousands of men and women employed in its workshops and factories, is told in a new type of documentary film produced for the company by Verity Films. The film—"Far Horizons"—combines the qualities of a feature story with a background of industry during the war years. The war sequences on land, on sea, and in the air are actual combat material, much of which has not been shown before, and the war story of Dunlop is told through the voice of an executive who has been assigned to write it. Throughout the story runs the history of the war, and step by step, the film shows how the Dunlop organisation answered every call for supplies. The variety of equipment made can best be described by saying that every sailor, soldier, and airman who went into battle carried some piece of clothing or equipment produced by the Dunlop factories. At a private showing of "Far Horizons" in London on December 9, the film was introduced by Mr. H. L. Kenward, Director of Distribution, Dunlop Rubber Company, who paid a striking tribute to the efforts of the employees during the war years.

Modernised Sleeping Cars, G.W.R.

Five different colour schemes have been used in the decoration of the ten compartments

AMONG the new and modernised G.W.R. passenger vehicles exhibited at Paddington recently (see our November 8 and 15 issues), was the first of the fleet of G.W.R. sleeping cars to be refurnished and re-decorated. A complete transformation of the internal appearance has been made. Ten sleeping compartments are included in the vehicle, eight of which are arranged with communicating doors to form double berths when required.

A different colour scheme has been introduced in each pair of compartments, and for the two single berths situated at the ends of the car, taking full advantage of recent advances in the development of plastic materials for wall paneling and similar purposes. The vehicle weighs 43 tons 3 cwt.

Ivory Plastic Panels

In the two single-berth compartments the walls are covered with ivory plastic panels, relieved with narrow walnut mouldings matching the door, which is of rich burr walnut. Ivory plastic is used also to cover the top of the inset table, and for such fittings as ashtrays and trinket trays; the metal fittings are finished in satin silver, and every attention has been paid to the design and arrangement of these fittings to ensure the greatest convenience for passengers besides harmonising with the general decorative effect. Heating and lighting controls are grouped in a neat panel at the bedside.

An attractive ceiling treatment is obtained by the deep coving which extend from the four walls of the compartment, and culminate in a flat rectangular panel in the centre, carrying a flush electric light fitting of etched glass which provides the general lighting for the compartment. The coving are relieved by narrow walnut mouldings. Subsidiary lighting is provided by domed fittings in ivory plastic situated above the bedhead, wall mirror, and washbasin. The floors of all compartments are covered with a brown Wilton carpet, with beige borders.

The arrangement of the other sleeping compartments is similar, but the use of various colour schemes affords variety. One pair of compartments is panelled with apple-green plastic material; the bedhead and foot are in quilted green hide to tone with the wall panels, and relieved with beige edging and buttons. Narrow green mouldings relieve the ceiling, which

is ivory coloured, as are all the plastic fittings; the metalwork in these compartments is finished in satin silver, as in the single berths.

A contrast is obtained in the second pair of compartments by the introduction

of polished sycamore; green hide is used for the bedhead and foot, and the narrow relief mouldings also are in green. The walls of the remaining pair of compartments are covered with figured ivory leather cloth, with which the tan-quilted bedhead and foot, and tan-coloured mouldings, form an attractive colour combination.

The corridor is panelled throughout with cream plastic material, and a horizontal panel effect is obtained by the in-



Interior view of one of the modernised sleeping cars

of figured gold fabric as a wall covering, with narrow gold mouldings on the ceiling. In these compartments the bedhead and foot are in a shade of brown, edged with beige, and all metal fittings are finished in gold.

Further variety is obtained in the next pair of compartments by wall panels of

section of narrow flush mouldings of walnut colour. The carpet is brown, with beige borders, the whole effect being to harmonise with the walnut window and door mouldings. The lavatory is finished in the same plastic panels as the corridor, and has a mottled green Terrazzo floor.

L.M.S.R. MOTIVE POWER COMPETITION REVIVED.—In order to encourage friendly rivalry among the 45,000 motive power staff of the L.M.S.R., with the object of minimising locomotive failures, Mr. S. H. Fisher, Chief Operating Manager, has reintroduced the pre-war "Engine Casualty League" throughout the system. Under this scheme the 36 L.M.S.R. motive power districts are allocated a quota of points for every four-week period, the districts with the best mileage figures per mechanical casualty being awarded most points. In all, 7,817 locomotives and 206 engine sheds are involved in the scheme, which will run for twelve months, when shields will be awarded for exhibition at the ten most successful districts. In the pre-war

league, first place for three successive years was held by the Plaistow (London, E.) District; other districts which are defending their pre-war trophies are: Bristol, Shrewsbury, Bescot (Staffs.), Derby, Motherwell, Carnforth (Lancs.), Wellingborough, Bank Hall (Liverpool), and Crewe.

LOUDSPEAKERS AT BRISTOL STAPLETON ROAD, G.W.R.—A loudspeaker system for the direction of passengers is to be installed by the G.W.R. at Bristol Stapleton Road Station. The scheme includes an announcing room on the island platform, equipped with electric lighting, heating, a hot point, and washing facilities. It will be in telephonic communication with the

inspector's office and signal box. Two women announcers will broadcast train information between 6 a.m. and 11 p.m.

EQUIPMENT FOR POWER STATION MOVED BY RAIL.—More than 25,000 tons of girders, steelwork, and boilers, and approximately 600 tons of turbine machinery, are being moved by the L.M.S.R. and L.N.E.R. mostly from Renfrew and Middlesbrough, to equip the new power station under construction at Meaford (North Staffs) as part of the N.W. Midland Joint Electricity Scheme. Permanent sidings have been laid in at the new power station, which is connected with the L.M.S.R. North Staffordshire main line between Stone and Barlaston Stations.

Systematic Maintenance of Machine Tools

Mobile equipment for lubrication and servicing



Herbert mobile equipment for lubricating machine tools

WHEN the responsibility for lubricating machine tools rests with the operators themselves, it is often found that neglect of this procedure leads to costly damage, and, at length, to complete unserviceability of the equipment. An increasing number of machine tool users, therefore, is finding it advantageous to entrust lubrication to a specially trained operator, who makes regular examination of all the tools. To facilitate these inspections, Alfred Herbert Limited, Coven-

try, has designed a mobile equipment known as the Lubricar, which provides all the necessary apparatus for removing and filtering old oil and replenishing supplies of various types of oil and grease.

One of the pumps at the front of the unit is for extracting oil from the sump of the machine, either passing it through a filter to the filtered oil tank or discharging it direct into the 22-gal. waste-oil reservoir in the base of the Lubricar, according to the position of the control

Fifty Years in Rail Transport

(Concluded from page 690)

marshal facts and draw reasoned conclusions from them. I would say that crowding his practical training into a few years after joining the railway at about 22 or 23 years of age does not give the university graduate the same chance of acquiring that thorough detailed knowledge that the ranker has had in the 7 or 8 years he has had a start of him. The youngster from school is put on a job which he has to carry; he may be a booking clerk in a light office in the country, a goods or parcels clerk similarly placed, or a junior clerk in a district office. In all these jobs he has to carry responsibility for the work he does. In his spare time, if he is ambitious, he gets a theoretical knowledge of many railway subjects through the company's educational classes.

He may go into a signal box and acquire a practical knowledge of signalling; he sees how his superiors handle or mishandle staff; he rubs shoulders with all and sundry, customers and servants; in short, at 30 he is well trained in the practical work of running a railway by having had a share in the job of doing so.

In the middle thirties both men may get a chance in a higher administrative post. Many people say a knowledge of detail is not essential to attain success in

administration. That may be a theory, but it does not accord with my experience. I have found that in dealing with a man, if you can tell him out of your practical experience how you would do his job and where he needs putting right, whether it is a clerk in his office work, a signalman in his signal box work, a guard in his train working duties, or a shunter in his shunting work, you are in an immeasurably stronger position than if you are judging from a series of reports or statements.

I feel the chief who is in the hands of his specialists, no matter how good they may be, can never carry the same weight or instil the same confidence into men as a man who his subordinates respect because of his wide and practical knowledge. The only besetting sin of the ranker, and one he should guard against, is becoming such a slave to detail that he can never loose himself from its bond.

Where does the answer lie to the problem I have propounded. I feel that the young embryo railwayman should decide his career before he leaves school at, say, 16, in the same way as a man training for law or medicine, or other specialised careers does, and that there should be open to him university courses spread over five or six years agreed between the railways and the universities which would embrace several years of practical work in railway jobs.

A railway career has tremendous in-

valve. The suction end of the pump has a 14-ft. length of flexible hose for extraction of oil from the headstock, feed boxes, apron, and other oil reservoirs of the machine tools; the second pump, also fitted with a 14-ft. hose, is for replenishing units requiring attention from the 12-gal. filtered oil tank.

The upper section of the Lubricar is divided to carry five removable tanks and two boxes which carry supplies of paraffin, hydraulic oil, spindle, compressor, and machine oil; grease and grease guns; and tools, cleaning materials, and spares. The tanks can be enclosed by two hinged folding covers which can be locked in position. The smaller items of equipment include a brush for cleaning filters, sump plugs and caps; oil kettles and funnels; and spanners, and screwdrivers.

Four-Wheel Trolley

The Lubricar is mounted on a four-wheel trolley, the rear pair of wheels having a castor action; the front wheels are fitted with expanding brakes operated by a hand lever with ratchet. A towing hook is provided at the front end. Regular use of the Lubricar in charge of a trained operator has been found to save its initial cost in a very short time by reason of the reduction in breakdowns and repairs.

A periodical inspection of machine tools enables various troubles to be rectified at their source by giving early warning of broken or choked oilers, contaminated or insufficient oil in the headstock or other units, choked filters, and other obstructions to efficient lubrication.

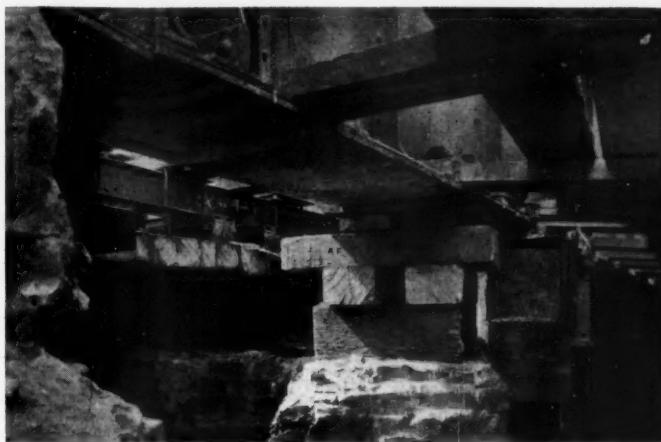
The saving in repair costs arising from servicing at regular intervals has been estimated on the basis of practical experience with the Lubricar at 80 per cent. The equipment is 5 ft. 5 in. in length, 2 ft. 6 in. wide, and 3 ft. 9 in. high, and has a net weight of 560 lb. When fully loaded with oil and grease, the weight is 672 lb.

terests that a lifetime's work only increases, and as transport plays such a large and important part in the Nation's life, the best possible brains should be enlisted and trained for its conduct and development.

LONDON TRANSPORT NEW TRAM & TROLLEY BUS MAP.—London Transport has produced a new London tram and trolleybus map, the first to appear for six years. It has been redesigned on the lines of the new bus map and guide to show the 102 miles of tramway and 255 miles of trolleybus routes with the greatest possible clarity. On the back, 37 tram and 51 trolleybus routes are shown, with journey time, first and last cars, and route followed. All-night services are distinguished in blue lettering. The map covers an area from Barnet in the north to Purley in the south, and from Uxbridge in the west to Dartford in the east. Every street traversed by trams or trolleybuses is named, and much other information is included. All the Thames bridges are named. Underground stations and main-line termini are shown, and open spaces, football grounds, and notable buildings are indicated also. The map is obtainable on application from Underground stations and inquiry offices and at 55, Broadway, S.W.1. It was drawn by the late Mr. Fred J. H. Elston, and printed in four colours by Waterlow & Sons Ltd.

A Difficult Bridge Renewal, Metropolitan Line, L.P.T.B.

Reconstruction successfully completed by London Transport engineers despite restricted working space and heavy traffic



Temporary support of old main girder to allow construction of new bearing at lower level

BRIDGE M.R.10, carrying the Metropolitan Line northbound fast and local tracks between West Hampstead and Kilburn, was, until a few months ago, a wrought-iron girder skew structure, built in 1879 to carry the original double-track line of the Baker Street and Harrow extension of the Metropolitan over the Hampstead Junction line (now part of the L.M.S.R.), open since 1860. It was paralleled later by two additional independent bridges, first by the Great Central (now L.N.E.R.) line into Marylebone on the south side, and then by the Metropolitan fast tracks on the north. The direction of running lines was changed in preparation for the projection of Bakerloo trains over the Metropolitan tracks in 1939, when the lines over the old bridge became the local and fast northbound roads.

Structural Features

There are two clear spans, 62 ft. 6 in. and 59 ft. 4 in. long, of which one crosses the L.M.S.R. electrified double lines; they are supported on brick abutments and a narrow central pier. The skew is so acute that only two of the thirteen cross-girders of each span are supported by main girders at both ends; the others have one end on an abutment or on the pier. The old superstructure included two sets of cross-girders, the original sets, hung under the main girders by bolts, and additional girders added later at a higher level. Rail-bearers carrying timber waybeams were fixed to the webs of the cross-girders, and the floor was of timber planks.

The site is exceptionally congested and allows very little working space, in view of the close proximity of the independent bridges on each side. The old bridge, weak for modern loading, was scheduled for reconstruction just before the war, and the new steelwork required was ordered and fabricated. Erection, however, was postponed in case the southbound tracks should be damaged while work on the two northbound tracks over the old bridge was in progress, a circumstance which would have caused a complete stoppage of traffic.

Reconstruction was begun eventually in March, 1946. Before work on the bridge itself began, four temporary crossovers

were laid to enable traffic in both directions to run over the two southbound lines during week-end possessions. At these times Metropolitan (fast line) and Bakerloo (local line) trains ran over the same track between Finchley Road and Willesden Green; a new signal and train-stop was sited on the southbound local road just north of the bridge to control northbound running during the special working. The longest continuous possession that the engineers

could be given on the Metropolitan tracks was 39 hr.; and on the L.M.S.R. tracks below it was 30 hr., and this had to be taken before May 7.

The new bridge consists of steel-plate main girders with cross-girders at 9-ft. centres, the longest 27 ft. 8 in. Between these cross-girders are 14-in. x 6-in. rail-bearers and 4-in. x 3-in. filler joists encased in concrete, covered with asphalt and tiling. The concrete deck stops short of the stiffeners so that the whole of the main girders is accessible for painting. Smoke baffle plates of steel plate protected by asbestos sheets riveted on with copper rivets are provided over the L.M.S.R. tracks.

Special Steel Packings

The track has been raised permanently by 11 in. to accommodate the new ballasted deck, and during the work the tracks were raised a further 6 in. by inserting temporary 8-in. x 5-in. steel waybeams carrying timber sleepers. These were laid on steel packings specially designed to suit first the old and then the new cross-girders.

Because of the peculiar arrangement of the deck system on the old bridge, the bearings of the new girders are 2 ft. lower than those of the old. The first work to be undertaken on the bridge itself, therefore, was to build temporary supports for the old girders while the new bearings were under construction. When the new bearings were ready and all preparations had been made, one pair of new main girders was brought by rail to the site at night, and placed by cranes outside the old main girders in the narrow spaces between the bridges.

The next stage, carried out during a long week-end possession, was to cut out the old cross-girders of one span and lower

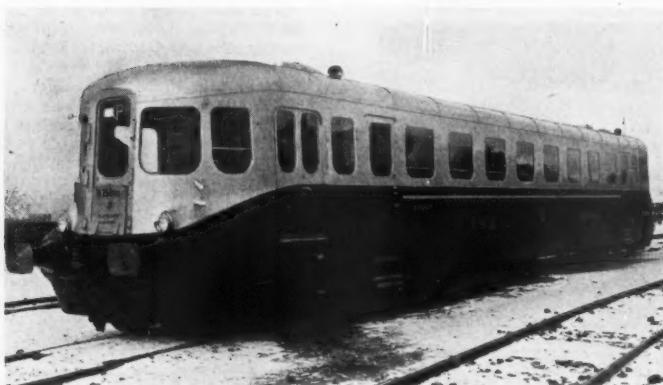
(Continued on page 697)



New cross-girders being erected: main girders already erected on each side. Note packings in place for temporary steel waybeams

Restoration of the "Slovak Arrow" Service

Fast railcar service restored in Czechoslovakia



A new diesel railcar for "Slovak Arrow" service

IN 1936 the Czechoslovak State Railways supplemented its diesel-operated "Blue Arrow" Prague-Bratislava service by a new service comprising two petrol-engine single-unit railcars and known as the "Slovak Arrow." The railcars were built by Tatra, and were scheduled to cover the 397 km. (246½ miles) in 4½ hr., with a stop at Brno.

Once again the railcars provide the fastest service between the two cities, but the journey now takes 5½ hr., with a departure from Prague at 4 p.m. and from Bratislava at 7.5 a.m. The present average speed is 43 m.p.h. as against 55 m.p.h. before the war, but work proceeding on bridge restoration should enable this to be improved later.

The July 8, 1938, issue of *Diesel Railway Traction* gave some technical details of the railcars. Each unit, which is 25 metres in length, is divided into two saloons with a small buffet between. Only second class passengers are carried and they pay a small supplement for reserved seats. A coke-burning stove warms the water for heating.

Maximum speed is 130 km.p.h. (81 m.p.h.), axle-load is 11 tonnes, and weight in working order 42.5 tonnes. There is a 4-cycle, 6-cylinder internal-combustion engine. Fuel consumption is approximately 1.5 lb. a mile. The drive is reversible and the two 165 b.h.p. power

units are equipped with Sousedik electro-mechanical transmission. No buffering or drawbar gear is provided.



Interior view of one of the original railcars

From a correspondent we have received some details of a recent journey on one of the railcars. The first part of the run

speed giving a maximum of 130 km.p.h. (81 m.p.h.). A free wheel allows rapid changes of speed during running. The reverse gear is on the back axle. Control is made easy as the driver can give electric impulses from simple instruments operating electro-pneumatic valves.

Each car seats 64 passengers. The body is made of welded sheet metal, and the interior is covered with washable impregnated pasteboard, insulated from cold and sound by wool packing. Ventilation is by a fan in the roof and heating by the exhaust gases. Compressed-air brakes act on each wheel. During trials, an acceleration to 100 km.p.h. (62½ m.p.h.) in 87 sec. was recorded.



One of the two original "Slovak Arrow" railcars

NEW G.W.R. LONDON DEPOT.—A new G.W.R. fish and market depot is to be built at St. Ervans Road, Westbourne Park, to provide more suitable accommodation for dealing with traffic of this class at present handled at Paddington Station. A covered platform, offices, staffrooms, water supply, drainage, lighting, and heating are included in the plans.

Reconstruction of the Mont Cenis Tunnel

The tunnel lining for 166 ft. on the French side was destroyed by Germans in their retreat, and the entrance blocked by demolitions

THE Mont Cenis tunnel, which, as reported in *The Railway Gazette* of October 4, was re-opened for traffic on September 1, is approached by the Maurienne Valley, along which the German troops retreated in September, 1944, blowing up 31 bridges and viaducts between Saint-Pierre-d'Albigny, near Chambéry, and Modane, a distance of about 60 miles. All the bridges were reconstructed temporarily within a year, and trains have been running into Modane since September 14, 1945.

Modane is the last station in France on the main line from Paris to Turin. To reach Bardonnechia, the first station on the Italian side, the railway pierces the Alps in a tunnel 13,668 m. (8 miles 870 yd.) long through the Fréjus mountain. This is the oldest of the Alpine tunnels, and is better known as the Mont Cenis tunnel.

Damage to Tunnel Mouth

In retiring from Modane to the Alpine crests, dominating the valley, the Germans blew up the entrance to the tunnel, and not until their withdrawal in May, 1945, was it possible to inspect the extent of the damage. It was found that an area of 120,000 sq. ft. at the mouth of the tunnel had been destroyed completely. An avalanche of gravel, stones, and masses of rock had overwhelmed everything, sleepers and rails being swept away under it down the mountain side.

Reconstruction work began on August 15, 1945, with the driving of a gallery nearly perpendicular to the tunnel in order to gain access to the interior behind the débris. The gallery, 200 ft. long, was finished on October 4, 1945, some days after South African troops had succeeded in entering the tunnel from the Italian side. All the tunnel lining for a distance of 166 ft. had been destroyed. Numerous unexploded mines and some rolling stock were found beneath the débris.

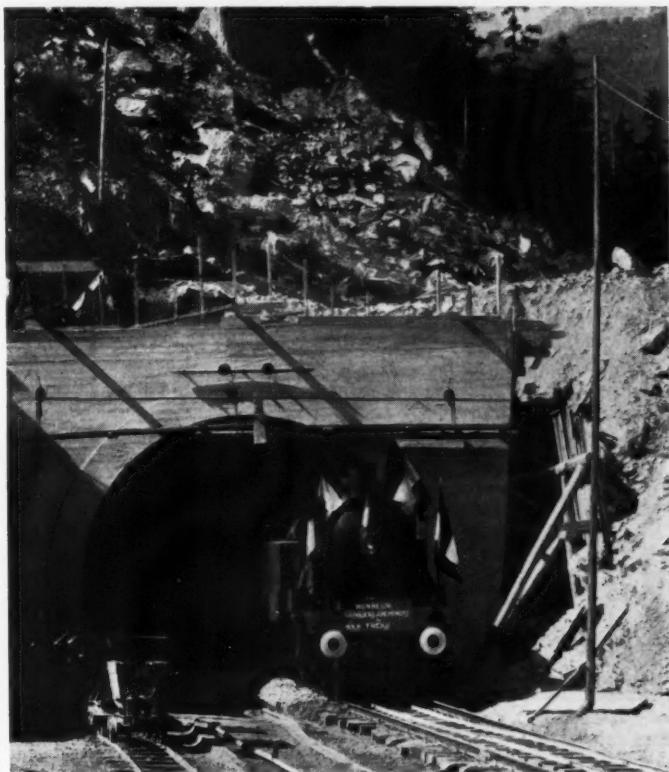
Reconstruction work was put in hand at once, and some particulars of the procedure adopted have been given in our French contemporary *Notre Métier*. Two galleries were driven, one on each side of the bore, and from these it was possible to make excavations for the concrete vertical supports. The roof gallery and adjacent excavations were tackled next.

As soon as these had been cleared and timbered, the centring was erected and the roof and walls were concreted. The core was then removed from the heading, and the floor of the tunnel was prepared and concreted.

Towards the end of March this year,

pieces to facilitate transport. As the whole mass was unstable and shifting, it was necessary to use wood props and steel plates capable of resisting enormous pressures, and to hurry with the pouring in of concrete to form the new lining of the tunnel.

To ensure the safety of the workmen, and to avoid landslides, which were difficult to control and clear away, it was found necessary to use an average of more than 800 cu. ft. of wood a yard in the tunnel. Despite all difficulties, the



Inaugural train leaving the tunnel on the re-opening day

when the temperature permitted, a second gallery was pierced from the exterior to expedite the clearance of the gravel and stones, while the rocks were blown to

work was completed by the contractors under the supervision of French National Railways (S.N.C.F.) engineers in a relatively short time without accident.

A Difficult Bridge Renewal

(Concluded from page 695)

them to the L.M.S.R. tracks; the old main girders were lifted, slewed round, and loaded on to wagons. The new main girders were then put in position, their cross-girders were inserted, and the track, was restored. The lifting of the main girders, weighing up to 22 tons each, was an operation requiring great care, as several of the lifts were at the limit of permissible radius; clearance at the back ends of the cranes was much restricted by the girders of the adjoining bridges, and overhang of the L.N.E.R. up line was permissible only for short periods. A London Transport 30-ton capacity and an L.N.E.R. 35-ton capacity crane were used. Several lifts were necessary for each girder; those at the larger radii were made by both

cranes working together. The second span was later dealt with in the same way. The completion of the floor, with concrete deck, drainage arrangements, asphalting, tiling, and final laying of the ballasted track, was subsequently carried out under traffic, with a number of short possessions.

The work was completed in September, 1946. The special train-running arrangements worked well throughout the reconstruction, with little delay to traffic.

CLOSING OF SPEAN BRIDGE — FORT AUGUSTUS BRANCH, L.N.E.R.—In view of the heavy maintenance costs in relation to the quantity of traffic conveyed over the Spean Bridge—Fort Augustus branch line, the Minister of Transport has instructed the L.N.E.R. to close the branch on December 31. The road service now pro-

vided by the railway from Spean Bridge for miscellaneous goods traffic will be extended by arrangement to cover coal.

TRANSPORT NEEDS OF ARGENTINA.—Lord Wardington, speaking at the annual general meeting of the Bank of London & South America Limited, on December 17, said that at present there was a great shortage of capital goods in Argentina, especially machinery and vehicles. For some years to come there would be, doubtless, a large market for aircraft, locomotives and rolling stock, trams, motor cars and vehicles, ships, oil-drilling machinery, and spare parts. It had been stated officially that Argentina needed imported materials for industry and transport alone to the value of over 1,000 million pesos annually during the first five post-war years.

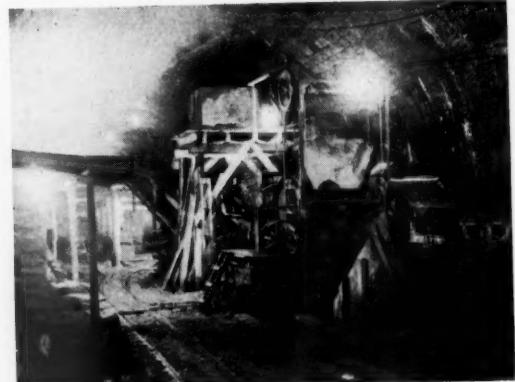
Reconstruction of the Mont Cenis Tunnel



Landslide at the tunnel mouth caused by German demolitions



At work in the uppermost gallery



Concrete-mixing site inside the tunnel



Section of repaired tunnel arch with damaged vaulting in background

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RAILWAY NEWS SECTION

PERSONAL

The Minister of Transport stated recently in the House of Commons that he was re-appointing Mr. E. S. Shrapnell-Smith to be a member of the Road & Rail Appeal Tribunal constituted under section 15 of the Road & Rail Traffic Act, 1933.

Sir Andrew Duncan, M.P., and Mr. Robert L. Angus have joined the board of the North British Locomotive Co. Ltd. Sir Andrew Duncan, who was Minister of Supply, 1940-41, and 1942-45, is Independent Chairman of the executive committee of the British Iron & Steel Federation, and a director of Imperial Chemical Industries Limited. Mr. Angus is Chairman of William Baird & Co. Ltd. and other companies.

Lord Glentoran has been appointed a member of the Northern Counties Committee, London Midland & Scottish Railway Company, in succession to Earl Peel, who has resigned from the committee subsequent to his recent appointment as Deputy Chairman of the L.M.S.R.

The British Employers' Confederation at its annual meeting elected office bearers for the ensuing year as follow: Honorary President, Viscount Weir; President, Mr. G. S. Maginness; Vice-Presidents, Mr. Frank Longworth and Sir Frederick Bain. Viscount Weir is Chairman of G. & J. Weir Limited, Mr. Maginness is Chairman & Managing Director of the Churchill Machine Tool Co. Ltd., Mr. Frank Longworth is Chairman & Managing Director of Thomas Longworth Limited, and Sir Frederick Bain is a Deputy Chairman of Imperial Chemical Industries Limited.

Mr. Kenneth Hall recently resigned the Managing Directorship of the Indian Aluminium Company to become Managing Director of the Northern Aluminium Co. Ltd. Mr. S. E. Clotworthy has become a Director of the latter company.

Mr. Charles E. Stockdill, who, as recorded in our December 13 issue, has retired from the position of Assistant to the Vice-President, Canadian Pacific Railway, joined the company in 1896 at London, Ontario. In 1904 he was appointed Superintendent's Chief Clerk at Winnipeg, and apart from two years at Calgary, he remained at Winnipeg, from 1915 as Assistant to the Vice-President & General Manager, Western Lines, before going to Montreal three years ago, as Assistant to the Vice-President, where he has played an important part in the carrying out of the company's equipment modernisation programme. Mr. Stockdill's father, Mr. Frederick R. Stockdill, was Assistant Signal Engineer, C.P.R., and his paternal grandfather, Mr. Richard Stockdill, was for 40 years with the L.S.W.R. Mr. Stockdill is a cousin of Mr. F. R. Stockdill, Assistant Accountant of the Southern Railway.

Mr. H. R. Webb, Assistant Stores Superintendent, Great Western Railway, who, as recorded in our December 6 issue, has been appointed Stores Superintendent, from January 1 next, entered the company's service at Wolverhampton Stores in 1903, and, after five years' experience there, was transferred to Swindon. He was appointed Clerk-in-Charge of Accounts in 1923; and Chief Correspondence Clerk in 1928; and he was promoted to be Assis-

which he made many friends in railway circles. His connections extended in this country throughout the main-line railways and leading locomotive builders, and he had a long association with South American interests and Colonial railways.

Mr. W. G. Edwards, formerly Managing Director of Hordern, Mason & Edwards Limited, power press manufacturers, has accepted the position of Chairman of the reconstituted board of that company, subsequent to the acquisition of its share capital by Cincinnati Milling Machines Limited.

Mr. Frederick Munns, Works Superintendent, Eastleigh, Southern Railway, has been elected a Member of the Institution of Mechanical Engineers. Those recently elected Associate Members include Messrs. V. H. Coleman, District Locomotive Superintendent, Sudan Railways, and D. le D. J. Wedekind, Locomotive Engineer's Office, Dunedin, New Zealand Government Railways. Those who have now transferred from associate membership to full membership include Messrs. D. G. Ansell, Works Manager, Road Transport Department, Nizam's State Railway, and S. L. Saksena, Officiating Mechanical Engineer, Parel, Bombay, Great Indian Peninsula Railway.

Mr. Arthur Parkinson has been appointed an Executive Director of Crompton Parkinson Limited. He is the son of the late Mr. Frank Parkinson, who was Chairman of Crompton Parkinson Limited. Mr. Parkinson has been with the company since 1936, apart from a period of service with the Royal Electrical & Mechanical Engineers at home and in the Middle East, during which he attained the rank of Captain, and holds the position of Sales Manager of the company for lamps and lighting equipment.

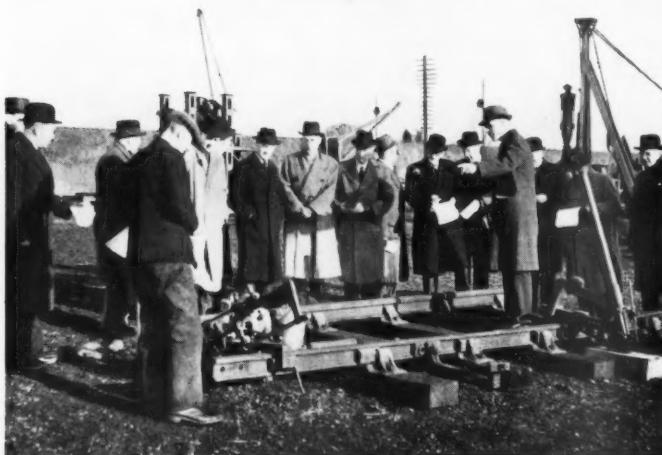
tant to the Stores Superintendent in 1929. He became Principal Assistant to the Stores Superintendent in 1940, and Assistant Stores Superintendent in February, 1943. Mr. Webb holds the Royal Society of Arts Silver Medal for Accountancy, and he obtained distinction at the London School of Economics in Accounting and Business Methods, and in Commercial and Contract Law. He is Chairman of the Finance Committee of the Swindon Branch of the G.W.R. Staff Association, and Chairman of the Industrial Sub-Committee of the Swindon & District National Savings Association.

We regret to record the death on November 23, at the age of 63, of Mr. Anthony Durrant, who at the commencement of the recent war was appointed Manager of the Railway Department of C. C. Wakefield & Co. Ltd., which position he held at the time of his retirement in February, 1945. He joined the company in 1906, and during practically the whole of his career he was associated with the Railway Department, in the course of

Among those recently appointed to be His Majesty's Lieutenants for the City of London are Lord Ebbisham (lately Director, Southern Railway), Sir Leslie Boyce (Chairman & Managing Director, Gloucester Railway Carriage & Wagon Co. Ltd.), Lord Airedale (a member of the Audit Committee, L.N.E.R.), Sir Charles Hamble (Director, and formerly Chairman, Great Western Railway), Sir Patrick Ashley Cooper (Member, L.P.T.B.), Mr. G. M. Booth (Chairman, San Paulo (Brazilian) Railway), Sir Alan Anderson (Director, L.M.S.R.; lately Controller of Railways, Ministry of War Transport, and Chairman, R.E.C.), Mr. W. K. Whigham (Deputy-Chairman, L.N.E.R.), Sir Edward Peacock (Director, Canadian Pacific Railway), Sir Andrew Duncan (Independent Chairman, executive committee, British Iron & Steel Federation) Lord Palmer (formerly Deputy-Chairman, Great Western Railway), Sir Francis Dent and Sir Herbert Walker (Directors, Southern Railway), the Hon. J. J. Astor (Director, Great Western Railway), Sir Edward Wilshaw (Chairman, Cable & Wireless Limited).

G.W.R. Plant Demonstration Train

A visit of inspection



A demonstration in progress

ON December 4, the plant demonstration train which has been touring the Great Western Railway system, and which was illustrated on page 538 of our issue of November 8, was inspected at Hayes, Middlesex, by the Chief Engineers of other railways and some of their senior assistants, together with officers and representatives of other departments of the Great Western Railway.

Wide Range of Exhibits

The exhibits varied in size from types of mobile cranes and an excavator to electric hand tools. During the past two months, the exhibition has visited nine different centres, and demonstrations have been given to about 3,000 members of the Engineering Department staff of all grades, some senior Inspectors from other railways, and the members of Sectional Council No. 5, Great Western Railway.

The opportunity given of seeing and handling modern equipment has undoubtedly created greater interest in the general

use of mobile plant. The demonstration staff consisted of five men under an Inspector, living in a camp coach travelling with the train, and was augmented by local staff at each centre.

Those present for the inspection on December 4 are shown in the accompanying illustrations and included:

L.M.S.R.: Messrs. W. K. Wallace and J. Briggs.

L.N.E.R.: Messrs. G. B. Barton, T. H. Seaton, R. C. Rattray, and A. G. Nightingale. Southern Railway: Messrs. V. A. M. Robertson, A. Dean, F. E. Campion, C. W. King, and F. Mundy.

L.P.T.B.: Messrs. P. Croom-Johnson, C. E. Dunton, H. Chanter, H. C. Triffler, J. F. Woolacombe, and T. H. Peerless.

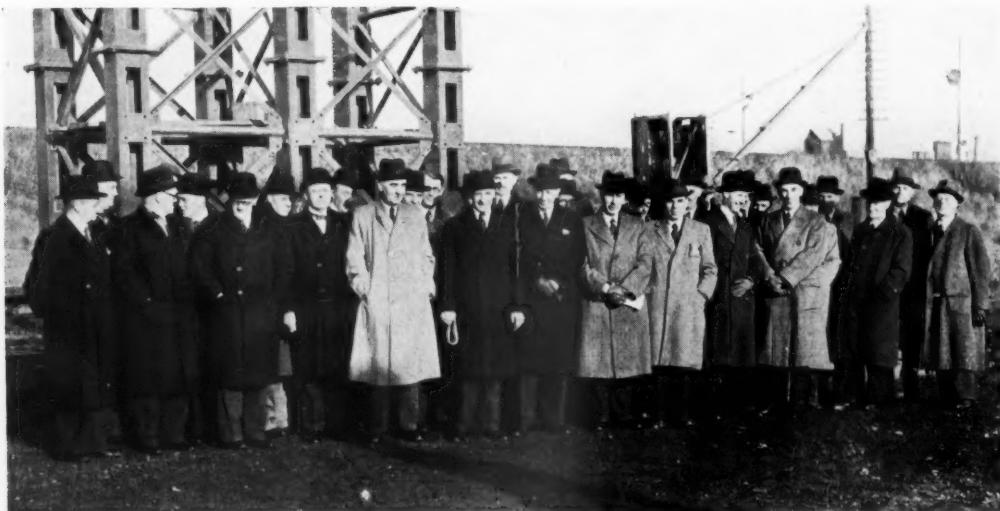
G.W.R.: Messrs. A. S. Quartermaine, David Blee, H. Adams-Clarke, S. G. Hearn, A. E. C. Dent, C. T. Cox, H. G. Kerry, C. H. Morgan, M. G. R. Smith, H. Savage, E. T. Davies, A. Waple, H. K. Roseveare, and E. J. Matheson.

Railway Gazette: Mr. J. A. Kay.

MOTOR VEHICLES (CONSTRUCTION AND USE).—The Minister of Transport on November 29 made the Motor Vehicles (Construction & Use) (Amendment) (No. 4) Regulations, 1946.



Showing (centre) Mr. A. S. Quartermaine, Chief Engineer, G.W.R., with some of the demonstrating staff



Group of railway engineers and others on a visit of inspection to the G.W.R. plant demonstration train at Hayes, Middlesex, on December 4

Questions in Parliament

Goods Traffic Restriction

Major A. L. Symonds (Cambridge—Lab.) on November 25 asked the Minister of Transport for what reasons a ban had been imposed on the movement of goods traffic by rail from Birmingham to the Cambridge area; and how soon the ban would be lifted.

Mr. Alfred Barnes (Minister of Transport) in a written answer stated: The restriction was imposed by the railway company to relieve congestion caused mainly by a shortage of locomotive power. The restriction will be removed as soon as the situation allows.

Level Crossings

Mr. Peter Freeman (Newport—Lab.) on November 25 asked the Minister of Transport how many level crossings still existed over main roads; and what steps were being taken to replace them with bridges or tunnels.

Mr. Alfred Barnes in a written answer stated: There are 913 level crossings on trunk roads and other class I roads. The rate at which they can be eliminated depends on the relative priority of this and other urgent works. I will consider application from highway authorities for grants towards the elimination of level crossings on classified roads.

Travel Warrants for Nurses

Captain J. MacLeod (Ross & Cromarty—Lib. Nat.) on November 21 asked the Minister of Health whether he would consider issuing two free travel warrants per annum to nurses for use for home leave during their training.

Mr. George Isaacs (Minister of Labour & National Service), who had been asked to reply, stated in a written answer: Nurses placed in training away from home through the machinery of my department are already eligible under the same conditions as other transferred workers for two return railway warrants to their homes each year at a charge of 7s. 6d. on each occasion. I am sending Captain MacLeod a copy of the leaflet which sets out the arrangements in detail.

Liverpool Street-Hertford Railway Service

Lt.-Colonel D. C. Walker-Smith (Hertford—C.) on December 9 asked the Minister of Transport why the 6.40 p.m. train from Liverpool Street to Hertford on the evening of December 2 had been 51 minutes late in arriving at Waltham Cross, a distance of only 12½ miles; and what steps he proposed to take to safeguard the train users of Hertfordshire from such delays.

Mr. Alfred Barnes: On December 2, engine-maintenance difficulties at the locomotive depot delayed the start of the 6.40 p.m. train from Liverpool Street to Hertford for 19 minutes. At Tottenham the engine failed, and time was lost in changing it. A further 10 minutes was lost because the train was then running out of schedule, and I am informed that it arrived at Waltham Cross 40 minutes late. I regret that, in present circumstances, it is not practicable to avoid delays of this kind.

Colonel Walker-Smith: Is the Minister aware that these delays are sadly typical of the line running from Liverpool Street to Hertford? Will he not take some measures to try to get this service better; and, finally, is he aware that the only reason I do not give notice that I will raise this matter on the adjournment is

because I have already been balloting for some time in order to do so?

Mr. Barnes: I quite appreciate the difficulties on this line. It is not easy in a matter of months to overtake the deterioration of the past years.

Garage Facilities at Railway Stations

Lieutenant William Shepherd (Bucklow—C.) on December 2 asked the Minister of Transport if he was aware of the high charges for garage accommodation near railway termini; and what plans were in hand for the provision by the railway companies of garage facilities at the main London stations.

Mr. Alfred Barnes: I have no jurisdiction over charges made by garage proprietors. I am not aware of any plans for the provision of garage facilities by the railway companies at the main London termini.

Lieutenant Shepherd: Will the Minister tell the House what he intends to do about it?

Mr. Barnes: Later on there will be plenty of opportunity.

Railway Passenger Services

Mr. J. H. McKie (Galloway—Ind. C.) on December 2 asked the Minister of Transport if he was aware that since the alteration in the scheduled hour of departure from Dumfries of the 9.30 p.m. train from St. Pancras to Glasgow (St. Enoch) passengers travelling on business from Castle Douglas, Kirkcudbright, and Dalbeattie were now unable to reach Glasgow until after 11 o'clock, whereas they could formerly do so at 9.30; and if he would take steps to restore those facilities.

Mr. Alfred Barnes: The change in this service is due to the acceleration of the 9.30 p.m. train from Euston to Glasgow. The traffic to Glasgow from the three places mentioned is, I am informed, so small that I should not feel justified in pressing the company to re-arrange the service.

Mr. McKie: Is the Minister aware that since the alteration in the time schedule of this train, which is the 9.30 from St. Pancras, not Euston, it has never once been less than an hour late? Will he consider reverting to the previous time, which would please people travelling to Glasgow and intermediately?

Mr. Barnes: Yes.

Mr. J. H. McKie (Galloway—Ind. C.) on December 2 asked the Minister of Transport whether he would now consider restoring the through train service by day from Stranraer to London (St. Pancras).

Mr. Alfred Barnes: The provision of through carriages from Stranraer to London (St. Pancras) was a wartime measure which was discontinued on May 6 last, when traffic ceased to justify it. I am advised that there is still insufficient traffic to justify a through service.

Mr. McKie: Is the Minister aware that his information regarding this being a wartime provision is totally wrong and that the train was put on in January and taken off about May? In view of the fact that Stranraer played a very vital part in our successful war effort, will he consider restoring this facility?

Mr. Barnes: Circumstances change, and, in view of the pressure on locomotives for goods traffic, we cannot keep on additional services.

Mr. McKie: Why put it on?

Mr. E. P. Smith (Ashford—C.) on December 2 asked the Minister of Transport if he would arrange with the Southern Railway Company to schedule the 8.23 a.m. train from Ashford, Kent, to

Cannon Street to stop at London Bridge, as had formerly been the case, in view of the delay now caused to regular passengers whose business took them to the south-eastern districts of London.

Mr. Alfred Barnes: I am informed that owing to the increase of services during the morning peak period the tracks through London Bridge Station are so fully occupied that it would not be practicable to stop the 8.24 a.m. from Ashford without cancelling at least one other train.

Mr. Smith: Does the Minister realise that there is a delay of about three man-hours per week to anybody travelling regularly and wishing to get to the south-eastern districts of London by this train, and will he also realise that I am one of the persons concerned?

Mr. Barnes did not reply.

Requisitioning of New Wagons

Sir John Mellor (Sutton Coldfield—C.) on December 9 asked the Minister of Transport why he had authorised the Requisitioning of New Privately-Owned Railway Wagon Notice (S.R. & O., 1946, No. 2011); and why December 16 had been selected as the date of the requisition.

Mr. Alfred Barnes: On the outbreak of war in 1939 privately-owned wagons, except those of certain specially-exempted types, were requisitioned so that they should be operated in a pool with railway-owned wagons. This has enabled substantial operating economies to be effected, and has greatly helped the railways in dealing with the heavy volume of traffic. New requisitioning notices have to be made from time to time to cover wagons built since the date of the original notice. No special significance attaches to the date on which the notice becomes effective.

Passenger Services

Flight-Lieutenant J. E. Haire (Wycombe—Lab.) on November 25 asked the Minister of Transport if he was aware of the continued dissatisfaction which was felt by persons travelling from Marylebone to High Wycombe and Princes Risborough due to the late running of trains; and whether he would improve the service.

Mr. Alfred Barnes in a written answer stated: I am informed that time-keeping on the Marylebone-High Wycombe line is not good, due to shortage of locomotives and to difficulties in locomotive maintenance on the L.N.E.R. Every effort is being made to improve the general locomotive position.

Mr. Driberg (Malden—Lab.) on November 25 asked the Minister of Transport if he was aware that the 5.42 p.m. train from Liverpool Street was regularly between 15 and 40 minutes late on arrival at Witham, and that on some occasions recently the 38-mile journey had taken 110 minutes; and if he would improve that service or amend the schedule so that it was not misleading to passengers.

Mr. Alfred Barnes stated in a written answer: I am informed that between November 4 and 15 the average late arrival at Witham of the 5.42 p.m. train from Liverpool Street was 18 minutes. The late running is due almost entirely to poor locomotive performance. The company is endeavouring to raise the standard of maintenance of its engines, a considerable proportion of which has had to be kept in service beyond the normal state for replacement, due to the exigencies of the war years. Meanwhile, attempts to re-adjust timetables to irregular and unpredictable delays would reduce the incentive to improve time-keeping and de-

privé travellers of the advantage of faster journeys on those occasions when adverse conditions do not obtain.

Mr. Ellis Smith (Stoke—Lab.) on November 25 asked the Minister of Transport if he would arrange for an improved train service between Stoke-on-Trent and other centres, in particular, between Stoke, Liverpool, Manchester and other large centres.

Mr. Alfred Barnes in a written answer stated: I understand that the services now in operation are adequate to carry the traffic, and that, in present circumstances, their augmentation would not be justified.

Mr. Ellis Smith on November 25 also asked the Minister of Transport if he would arrange for improved transport facilities in all industrial centres between 6.30 a.m. and 8 a.m. and between 5 p.m. and 6.30 p.m.

Mr. Alfred Barnes stated in a written answer: Road and rail passenger transport is, in general, at full stretch during the peak periods. I am always ready to investigate any specific complaints.

The Reverend R. W. Sorensen (Leyton West—Lab.) on November 25 asked the Minister of Transport if he would take steps to improve the train service between Leyton and Liverpool Street Stations, in view of trains being overdue for leaving by half-an-hour or more and the unwarmed cancellation of services.

Mr. Alfred Barnes stated in a written answer: The L.N.E.R. is short of serviceable locomotives. This delays services and sometimes makes it necessary to cancel trains at short notice. Every effort is being made to improve the position.

Coal Transport

Mr. Evelyn Walkden (Doncaster—Lab.) on November 21 asked the Minister of Transport whether he was aware of the accumulation of railway trucks loaded with coal which had been blocking the sidings and yards between Peterborough and the South Yorkshire pits for the past six weeks; that at certain Yorkshire collieries only a few empty wagons were available and that might have disastrous consequences if snow or fog should cause further delay in the return of such wagons; and what action he proposed to take to ensure continuity of coal production.

Mr. George Strauss (Parliamentary Secretary to the Ministry of Transport) stated in a written answer: I am aware that during the last two months some routes have been congested and that the railways are having difficulty in clearing accumulations of traffic due to insufficiency of locomotive power. The restrictions on the acceptance of traffic which have been imposed in order to clear the congestion have not applied to coal, the movement of which has thus generally been maintained. I have given instructions for special measures to be taken to ensure, so far as practicable, that no coal is lost by reason of short supply of wagons to the pits.

Freight Train Delays

Mr. J. A. Sparks (Acton—Lab.) on December 2 asked the Minister of Transport how many vacuum-fitted freight trains had been delayed after booked departure times at the London termini of the four main-line railway companies, awaiting locomotives and/or brake vans, for the week commenced November 11, 1946; and what had been the longest and shortest periods of delay involved.

Mr. Alfred Barnes: Twenty-seven vacuum-fitted freight trains were delayed at the London termini during the week in

question awaiting locomotives. There were no delays due to lack of brake vans. The longest period of delay was 200, and the shortest period was 2, minutes.

Mr. Sparks: Is the Minister aware that serious delay is occurring not only to fast freight trains, but also to goods traffic, largely as a result of a shortage of skilled operating grades? Is there anything the Minister can do to rectify the matter?

Mr. Barnes: The problem of the operating grades is receiving attention, but Mr. Sparks knows the difficulty.

Absenteeism on Railways

Lieutenant William Shepherd (Bucklow—C.) on December 9 asked the Minister of Transport if he would give figures relating to absenteeism on the railways at the present time.

Mr. Alfred Barnes: I will circulate the information in the Official Report.

Lieutenant Shepherd: Can the Minister give us a rough idea of the percentage involved in his answer?

Mr. Barnes: I would suggest that Lieutenant Shepherd should await the communication to which I have referred. The matter is too complicated to be dealt with in reply to a supplementary question.

Major C. C. Poole (Lichfield—Lab.): When the Minister supplies the figures, will he supply figures showing the absenteeism of directors from board meetings?

Mr. J. A. Sparks (Acton—Lab.): Is the Minister aware that very long hours are being worked by the operative grades, and that there are serious shortages of railway staffs?

Mr. Barnes: Yes, but that is inevitable in present circumstances.

Later Mr. Barnes circulated the following information:—

ABSENTEEISM ON RAILWAYS

Week ended November 16, 1946

Information in respect of the four main-line railways and the railways of the L.P.T.B.

(Absences from duty exclude those due to sickness or accident)

Number of staff absent from duty on weekdays during week in question for	Conciliation staff	Percentage of staff	Number of staff	Percentage of staff	Number of staff	Percentage of staff
1 day	9,683	2.3	6,629	4.8		
2 days	1,711	0.4	985	0.7		
3 days	507	0.1	275	0.2		
4 days	200	0.05	85	0.06		
5 days	145	0.03	52	0.04		
6 days	714	0.2	190	0.1		
		Percent-		Percent-		
		age of		age of		
Number of staff failing to report for duty on Sunday, November 10	4,544	3.6	2,521	1.6		

Retiring Age of Railway Employees

Mr. J. A. Sparks (Acton—Lab.) on December 9 asked the Minister of Transport how many officers of all classes at present employed by the railway companies were above the normal retiring age; and what proportion did they bear to the total number of officials employed.

Mr. Alfred Barnes: The number of staff in receipt of salaries of £500 per annum, excluding war advance, and over, employed by the main-line railways or on the railways of the London Passenger Transport Board is 3,139, and of these 33, or approximately 1 per cent., are above the age of 65 years.

Mr. Sparks: While I appreciate the valuable services rendered by officers and staff above the retiring age during the war, may I ask the Minister whether, in view of the new and urgent problems in the post-war years, he does not think that the railway management should contain a larger proportion of younger, more active

and virile minds, if these post-war problems are to be solved?

Mr. Barnes: That may be so, but at the moment I think that anybody who desires to remain in the service can be usefully employed.

Railway Stockholders Rally

A railway stockholders rally was held at Caxton Hall, Westminster, on December 13. Sir Charles Stuart-Williams, Chairman of the British Railway Stockholders Union, presided over a large meeting which protested strongly against the Government's nationalisation proposals, and demanded a public inquiry.

The chairman said that the Government had put before the nation a Transport Bill which surpassed all previous efforts in its disturbing character, in its interference with efficient and progressive transport agencies, and in the devastating effect it must have on the freedom and flexibility which all users of transport now enjoy.

The late Lord Stamp, a railwayman of authority and an economist of vision, had considered the L.M.S.R. group alone too big for one management, yet the Government proposed that a handful of gentlemen shall be put in charge of the four main-line systems, L.P.T.B., and many other undertakings. The proposals involve taking over railway-owned cross-Channel steamers, numerous hotels and other undertakings. The Bill proposes to take over all long-distance haulage, all short-distance haulage over an arbitrarily chosen mileage limit and so forth. What an illogical chaos this foreshadows; what an army of "snoops" drawing their salaries for this unnecessary and unproductive work; what a drain upon the national income and state of frustration, delay, and form-filling for all manufacturers and traders.

As regards the compensation offered, already some six varieties of compensation had been advanced by Government for nationalised industry. The methods applied to railway stockholders could only be described as "compensation on the cheap." It would seem that the very word "railways" incited the Minister of Transport to predatory measures. Whereas the average net revenue available for dividends over 23 years was £37,173,000, the wartime rental was £38,165,000, and standard revenue was £51,659,000, the Government proposals would cost the country no more than a total of £22,700,000, the difference being taken from the pockets of the stockholders.

Sir Herbert Williams urged stockholders to do all in their power to bring their protest before the Government. He proposed a resolution in the following terms:

"That this meeting of railway stockholders records its emphatic dissent from the Government's nationalisation of transport proposals, and, in the national interests, demands that, before the Transport Bill is proceeded with, a public inquiry should be held. The meeting further protests against the confiscatory nature of the compensation proposed for stockholders."

In approaching this problem, railway stockholders must not face merely the question of compensation. Every stockholder was entitled to have the same income after nationalisation as he had had before, but an even larger issue was that of the general public who would suffer if nationalisation be enforced.

Sir John Mellor seconded the resolution which was carried with acclamation.

OFFICIAL NOTICES

REQUIRED by Main-Line Railway Company for work in London: Assistants (Senior and Junior) experienced in design and able to undertake surveys and the preparation of detailed working drawings, calculations, estimates and specifications for all works in connection with bridges and structures. Engagement on a temporary basis at a salary of up to £10 10s. per week, plus War Advance (at present 2s. per week), according to qualifications and experience. Applications stating age, experience, etc., with copies of recent testimonials, to Box 39, 33, Tophill Street, Westminster, London, S.W.1.

SECTIONED PERSPECTIVE VIEW OF LOCOMOTIVE FRONT END. A notable drawing of L.M.S.R. class "7P" 4-6-2 locomotive of the latest type. Reprinted from *The Railway Gazette*, June 15, 1945. Price 2s. 6d. Post free 2s. 8d.

CIVIL ENGINEER. B.Sc., Assoc.M.Inst.C.E., also with engineering qualifications, recognised by Brazilian Government, fifteen years' residence in Brazil and formerly general manager of Railway there, now naturalised and with good connections in country, returning to Brazil after military service, desires to open agencies Rio and São Paulo to represent British firms. Enquiries solicited.—Box P35, W. H. SMITH & SON LTD., Manchester, 3.

THE RAILWAY SYSTEM OF JAMAICA. A general description of the system and its traffic, with an account of economic problems, the motive power used, and some features of operation. By H. R. Fox, B.Sc., M.Inst.C.E., General Manager, Jamaica Government Railway. Reprinted from *The Railway Gazette*, January 3 and 12, 1945. Price 1s. Post free 1s. 2d.

STATION DESIGN. A striking example of modern British practice at the important wayside station of Luton. Reprinted from *The Railway Gazette*, July 7, 1944. Price 1s. Post free 1s. 2d.

BRITISH WORK ON PERSIAN RAILWAYS. The achievements and difficulties of the R.E.s during the 13 months in which they laid the foundation for effective aid to Russia. Reprinted from *The Railway Gazette*, February 2 and 16, 1945. Price 1s. Post free 1s. 2d.

BRITISH Railway Company operating in South America has vacancy for a Draughtsman with railway experience. Preferably single man, age 25/30. Commencing salary £600 per annum. Passage paid and free quarters provided. Write with full details of qualifications and experience to Box 1461, c/o CHARLES BARKER & SONS LTD., 31, Budge Row, London, E.C.4.

Notes and News

Mersey Docks & Harbour Board Debentures.—The whole of the Mersey Docks & Harbour Board 3 per cent. debenture stock, 1930-1960, will be redeemed at par on July 1, 1947.

Draughtsman Required.—A British railway company operating in South America has vacancy for draughtsman, preferably single man, age 25-30, with railway experience. See Official Notices above.

Egyptian Delta Light Railways.—The board of the Egyptian Delta Light Railways Limited has recommended a dividend on the 5½ per cent. preference shares for the year ended March 31, 1946, of 5½ per cent., less Egyptian and British income tax.

Leopoldina Railway Debentures.—Interest at 2 per cent., less income tax, will be paid on January 1, 1947, to holders of the company's 4 per cent. debenture stock on the register on November 27, 1946. The payment is in respect of the half-year ended June 30, 1946.

North Western of Uruguay Railway.—The directors of the North Western of Uruguay Railway Co. Ltd. announce that it has been decided, in consultation with the stockholders' committee, to pay, on Monday, December 16, arrears of interest on the 6 per cent. second debenture stock (1894) in respect of the year ended December 15, 1936.

G.W.R. Doubling for Welsh Holiday Camp Traffic.—The G.W.R. has begun work on the doubling of a mile of the Cambrian Coast line between Afon Wen and Penychain, to accommodate additional traffic expected next year with the opening of a new holiday camp. The scheme includes the provision of a new down platform at Penychain Halt, and the extension of the existing one on the up side.

Ottoman Railway Holding Co. Ltd.—At the eleventh ordinary general meeting of the Ottoman Railway Holding Co. Ltd., held in London recently, the Chairman, Mr. R. P. W. Adeane, said that the Sinking Fund of the Turkish Republic had signified its intention of redeeming the whole of the 1935 bonds at par as at December 1, 1946. The scheme upon which the holding company was framed was dependent on the 1935 bond issue running the full gamut of its life, namely, 40 years. Had this occurred, the capital deficiency would have greatly decreased or even been worked off altogether. As it was, during the 11 years of the holding company's life, this deficiency had been reduced by nearly a quarter of a million pounds from £749,000

to £517,000 odd. When the company's holding of Turkish bonds had been converted into cash, the board would have the alternatives either of liquidating the holding company, or of continuing the company as a trust company in order to try over an extended period to value the "B" debentures and give the ordinary shares an opportunity of having some return, albeit in the remote future. This decision, however, would not be taken until next year.

Dorman Long & Co. Ltd.—The report for the year ended September 30, 1946, shows a net profit of £595,013, an increase of £38,855. A balance of £77,887 is brought in from the previous year, giving £672,900 available for distribution. An allocation of £250,000 is made again to general reserve, and the directors recommend net dividends of 8 per cent. on the non-cumulative second preference shares and the ordinary shares, together with 16 per cent. on the preferred ordinary shares. A balance of £93,228 remains to be carried forward.

Associated Equipment Co. Ltd.—A profit of £950,000 is shown in the report for the year ended September 30, 1946, compared with £1,035,500 in the preceding year. After allocations of £20,000 to employees' benefit reserve, £45,000 to general reserve, and an addition of £30,000 to unappropriated balance, the sum available for dividends is £187,500. Total interim and final dividends are proposed amounting to 2s. 6d. per £1 unit of stock, free of tax, equal to approximately 22.7 per cent. subject to tax at 9s. in the £ Total assets of the company, less liabilities and provisions, stand at £4,205,000, and compare with £3,980,000 at September 30, 1945.

Visit of Institute of Transport President to Midland Section.—Mr. R. Stuart Pilcher, President of the Institute of Transport, recently visited the Midland Section of the Institute at Birmingham. The Chairman of the Section, Mr. C. Rayner-Smith, presided, and Mr. Pilcher addressed the members on "Education for Road Transport Employees." After referring to the key place of transport in industry and its relation to commodity prices, the President spoke of the great number engaged in transport and of the progress of the Institute during the war. He then dealt with the educational facilities which the railways had provided for their employees and the schemes of examinations which had been evolved by the road transport industry and which were operated by the Royal Society of Arts. He said it had been proved an advantage to an employer to further the educational standards of his employees. The em-

ployees thereby discovered more interest in their work, increased their knowledge of the industry, and became more efficient. Education could promote a more contented transport industry, and that was of great national value because of the contacts made by transport with every other industry and with every section of the community.

Road Accidents in October, 1946.—The return issued by the Ministry of Transport of the number of persons reported to have died, or to have been injured, as a result of road accidents in Great Britain during the month of October last shows 472 deaths (compared with 534 in October, 1945), 3,191 seriously injured (compared with 3,249 in October, 1945), and 10,514 slightly injured (compared with 10,214).

Butler Machine Tool Co. Ltd.—For the year ended September 30, the net profit of the Butler Machine Tool Co. Ltd. was £45,916, as compared with £45,253 in 1944-45. Both figures include recovery of excess profits tax and provision for income tax. The directors recommend a dividend on the ordinary shares for the year of 12½ per cent., less income tax at 9s. in the £. The dividend will be payable on December 31.

Fine Record of Service of G.W.R. Canteen.—In the seven years during which it was thrown open day and night to the Allied Forces and Merchant Navy, over 20 million persons were served in the G.W.R. Staff Canteen on No. 1 platform at Paddington Station. The canteen was one of the busiest in the country and had a total turnover of £500,000. It is run by a committee composed of employees from the uniform passenger staff.

Argentine North Eastern Scheme of Arrangement.—A meeting of the holders of Argentine North Eastern Railway "B" debenture stock and "B" bearer debentures will be held at River Plate House, Finsbury Circus, London, E.C., on December 9, at 12.30 p.m., to consider a scheme of arrangement between the company and the debenture holders. Copies of the scheme can be seen at the company's offices, River Plate House, or at the offices of the company's bankers, Glyn, Mills & Company, 67, Lombard Street, E.C.3.

Austin-Crompton Parkinson Electric Vehicles Limited.—An agreement has been concluded between the Austin Motor Co. Ltd. and Crompton Parkinson Limited for an equal partnership in a company to be entitled Austin-Crompton Parkinson Electric Vehicles Limited. The object of this association is to continue and expand the business of manufacturing and selling electric vehicles and electric industrial trucks, formerly carried on by Crompton Parkin-

son Limited through its associated companies, A. E. Morrison & Sons Ltd. and Electricars Limited, which will be merged in the new company. It is stated that the policy of the new company will be to benefit fully from the organisations which have been developed by both partners. The details for distribution and service remain to be settled, but it is stated that the responsibility for the manufacture of electric vehicles and electric industrial trucks will be taken over by the Austin Motor Co. Ltd. on January 1, 1947.

L.M.S.R. Contract for Staffordshire Bridge Reconstruction.—The L.M.S.R. has placed a contract with a Mansfield (Notts.) firm for the reconstruction to modern design of a railway bridge between Uttoxeter and Rocester on the Churnet Valley line. The present bridge, which carries the railway over a private road and a stream near Rocester, has brick abutments and a superstructure of cast-iron main girders with a solid timber floor. The abutments will be rebuilt in brick in five-foot lengths, and the new superstructure will be constructed with reinforced concrete tee beams made at the L.M.S.R. concrete depot at Newton Heath, Manchester.

North Western of Uruguay Railway Co. Ltd.—There was a decrease of 12.56 per cent. in goods receipts on this railway in the year ended June 30, for, although the total tonnage conveyed was only 2.88 per cent. lower, there was an increase in the proportion of low-rated firewood traffic. The gross receipts of £66,419 show a decrease of £719 on the preceding year, but working expenses, totalling £57,842, also were lower on account of fewer repairs required to locomotives and rolling stock. In the preceding year the working expenses totalled £68,218. Net receipts of £8,577 show an increase of £9,657 compared with 1944-45, when the net result was a loss of £1,080.

G.W.R. Signalling School Re-opened.—There is a signalling school in each Division of the Great Western Railway, but the only one to run a model railway for instructional purposes is that situated near Paddington, which is shown in the illustration below. With the exception of some correspondence courses, all classes at Paddington were suspended during the

war, but recently the school has been opened again, and our illustration shows a class in progress, the lecturer being Mr. H. F. Hardy, Signalling Examiner, Great Western Railway.

C.P.R. Preference Dividend.—At a meeting of the board of directors held on December 9, a final dividend of 2 per cent. on the preference stock in respect of the year 1946 was declared payable on February 1, 1947, to stockholders on the books of the company at 3 p.m. on December 31, 1946.

Wantage Tramway Co. Ltd.—At an extraordinary general meeting of the Wantage Tramway Co. Ltd. on November 26, a special resolution was passed to the effect that the company be wound up voluntarily, and that Mr. Percy Stanier Clark, J.P., and Mr. Henry Saunders be appointed liquidators for the purposes of such winding-up.

B.E.T. Dividends.—The directors of the British Electric Traction Co. Ltd. have declared the following interim dividends on account of the financial year ending March 31, 1947, payable on December 7, 1946, to stockholders registered in the books of the company on November 7, 1946:—

6 per cent. cumulative participating preference stock: 3 per cent. actual (the same), less income tax at the rate of 9s. in the £.

8 per cent. non-cumulative preferred ordinary stock: 4 per cent. actual (the same), less income tax at the rate of 9s. in the £.

Deferred ordinary stock: 15 per cent. actual (the same), less income tax at the rate of 9s. in the £.

Christmas Trees at L.N.E.R. Stations.—The L.N.E.R. is holding Christmas tree displays at nine N.E. Area stations. On December 6, the Lord Mayor of Hull, accompanied by the Sheriff, opened at Hull a display consisting of a giant Christmas tree surrounded by a tableau. Mr. Wilfred Pickles simultaneously officiated at a similar ceremony at Newcastle. On December 11, a display at Darlington was inaugurated by the Mayoress, and one at Tynemouth by the Mayor. On December 12 the Mayoress of Scarborough and the Mayor of South

Shields, and on December 13 the Mayors of Middlesbrough and Harrogate, officiated at the opening of displays at their stations. The Lord Mayor of York (Alderman Fred Gaines), formerly Assistant Stationmaster, York, was invited on December 14 by Mr. C. M. Jenkins Jones, Divisional General Manager, North Eastern Area, L.N.E.R., to declare open the York display. It is hoped this year to beat the record for the previous year for many contributions and toys collected by these displays.

"Go Slow" Movement at Stratford.—**L.N.E.R.**—Mechanics and fitters at the L.N.E.R. Stratford locomotive depot began working to rule on December 11, as a result of the company not having agreed to their demand for extra pay. Shortage of locomotive power resulting from the delay to repairs has necessitated the cancellation of certain trains, mainly on London suburban services.

Collisions at Stetchford and Coalville.—**L.M.S.R.**—On December 10, in foggy weather, two passenger trains collided at Stetchford, near Birmingham, L.M.S.R. Several passengers received minor injuries. Both lines on the L.M.S.R. Burton-Leicester branch were blocked when a goods train and an engine and brake van collided near Coalville. Both engines were damaged and forced from the rails, and the wagons piled up.

Brighter Stations on the L.N.E.R.—Stations, signal boxes, and goods depots at more than 160 places on the L.N.E.R. system are to be repainted next year at a cost of nearly £123,000. The stations to be repainted include: Kings Cross; St. James Street to Chingford inclusive; Peterborough (North); Grantham; Skegness; Chelmsford; Felixstowe; Norwich (Thorpe); York; Harrogate; Coalwells; Coatbridge (Sunnyside); Burntisland; and Macduff.

Powell Duffryn Dividends.—An interim dividend of 3 per cent. actual, less income tax at 9s. in the £, will be paid on December 31 on £9,660,471 ordinary stock of Powell Duffryn Limited in respect of the year ending March 31, 1947. In announcing this payment the company states that the increase in the interim dividend is not to be taken as a guide to the board's policy in regard to the rate of final dividend for the year. On June 22, 1947, a dividend of 2½ per cent. actual, less income tax at 9s. in the £, will be paid on the company's £3,600,000 4½ per cent. cumulative preference stock for the half year to December 31, 1946.

King Arthur and the Southern Railway.—A fascinating blend of history, legend, medieval architecture, and recent locomotive practice was presented in the lecture on "King Arthur and the Southern Railway," by Mr. J. Pelham Maitland, Running Shed Superintendent, Nine Elms, at the meeting of the Southern Railway Lecture & Debating Society, at the Chapter House, London Bridge, on December 12. Illustrating his subject with a series of excellent lantern slides, the lecturer began with an account of King Arthur as an historical and legendary figure, and some of the cathedrals and castles associated with his name, and passed on to a description of the 74 locomotives of the "King Arthur" class on the Southern Railway. In conclusion, Mr. Pelham Maitland emphasised the remarkable service given by these engines, and the great publicity value of their names.

G.W.R. Signalling School, Paddington



Mr. H. F. Hardy, Signalling Examiner, G.W.R., taking a class at the re-opened Signalling School near Paddington (see paragraph above)